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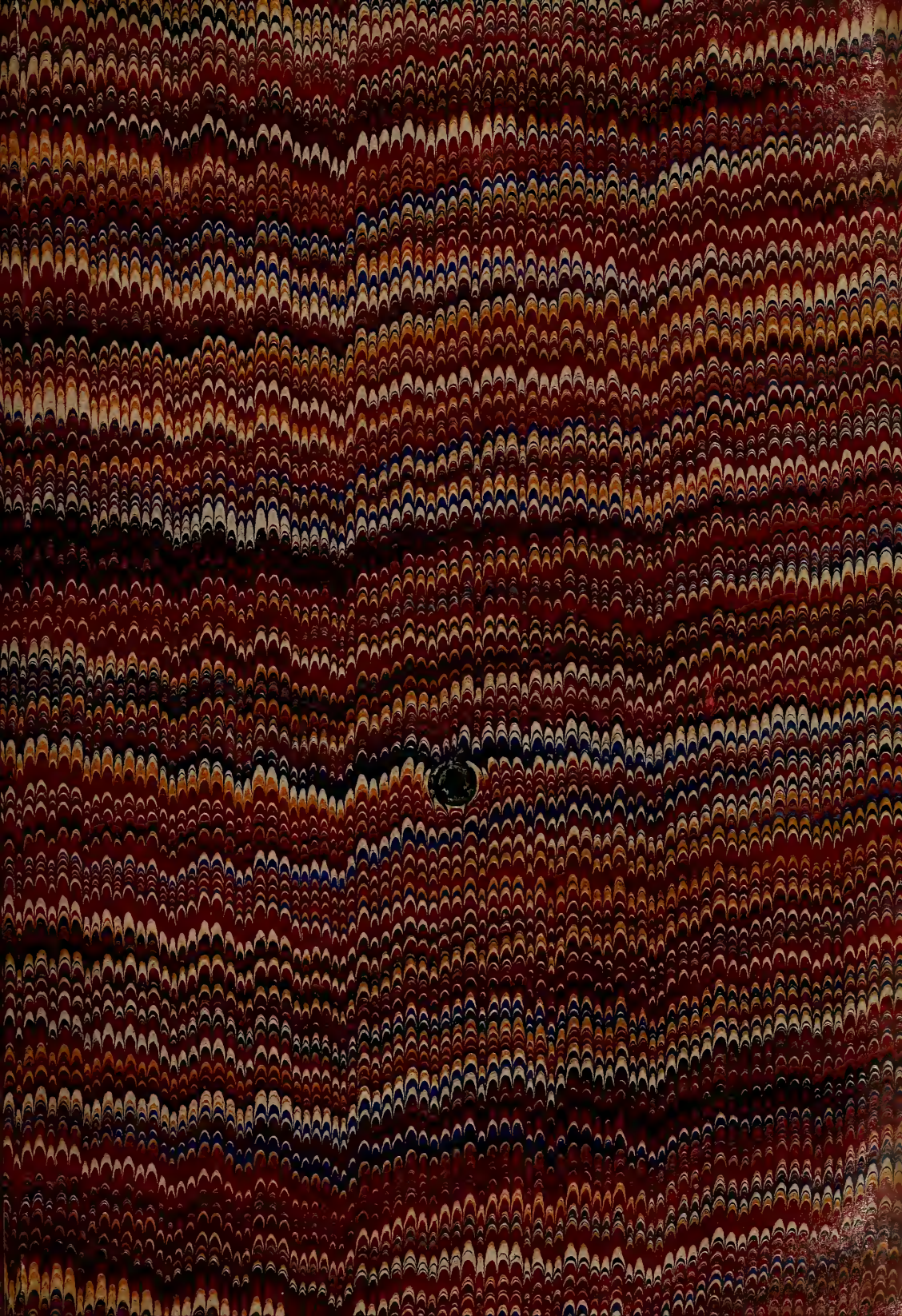
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EXTRACT

From an Act prescribing Rules for the Government of the State Library, passed March 8th, 1861.

SECTION 11. The Librarian shall cause to be kept a register of all books issued and returned; and all books taken by the members of the Legislature, or its officers, shall be returned at the close of the session. If any person injure or fail to return any book taken from the Library, he shall forfeit and pay to the Librarian, for the benefit of the Library, three times the value thereof; and before the Controller shall issue his warrant in favor of any member or officer of the Legislature, or of this State, for his per diem, allowance, or salary, he shall be satisfied that such member or officer has returned all books taken out of the Library by him, and has settled all accounts for injuring such books or otherwise.

SEC. 15. Books may be taken from the Library by the members of the Legislature and its officers during the session of the same, and at any time by the Governor and the officers of the Executive Department of this State who are required to keep their offices at the seat of government, the Justices of the Supreme Court, the Attorney-General and the Trustees of the Library.





RHODODENDRON CALIFORNICUM.

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THE CALIFORNIA HORTICULTURIST AND FLORAL MAGAZINE.

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THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

VOL. I. NOVEMBER, 1870. No. 1.

INTRODUCTORY.

It is but right that the projectors of any new undertaking in the field of journalism, should, in making their appearance before the public, give as far as possible an insight into their ultimate end and aim, state what they propose to accomplish, and also the means at hand for its successful issue. In endeavoring to place a horticultural journal before the public of California, we may be accused of a rash act, and, no doubt, if we thought as the majority do, such might be the case. It shall be our province to show the aforesaid majority that they are wrong and we are right. Encouraged by this belief, and also in the belief of an actual need for a publication such as we propose to issue, we, with all due deference, lay before the public the first number of the "CALIFORNIA HORTICULTURIST."

An extended and practical intercourse with all classes of cultivators of the soil, from the landed proprietor of two or three flower-pots to the possessor of hundreds of acres, has long since convinced us of the pressing necessity for a medium, through which all might set forth their experiences, observations and ideas on the horticulture and agriculture of the Pacific coast. The circumstances under which every cultivator finds himself placed, whether the experienced agriculturist from distant parts of the world, or the amateur, just initiating a flower-bed, render not only desirable, but absolutely necessary, that all the local information possible to be attained should be laid before him; and that it should be so arranged as to be of practical use and value to him in his occupation. It is this idea which has led us to the publication of this journal, as the long needed medium.

The climate, seasons and soil of California differ so materially from those of other regions, in almost every particular, and are so diverse, even in different parts of the State, that in many operations we are compelled to deviate from old established rules, and frame a system of our own. This variation and diversity, while presenting formidable difficulties to the agriculturist and horticulturist, yet affords an extended field for the successful cultivation of plants from the most widely separated localities. Our horticultural and agricultural products astonish the world as much now, as our gold fields have done in years gone by; and if we take into consideration the short space of time given to the cultivation of our fields and gardens, we must claim a marvelous progress already attained. The success of our labors has been so great that local peculiarities of soil and climate have been hardly taken into consideration; and the apple and orange, the grape and the watermelon, the walnut and the almond, the tea plant and the hop vine, the cabbage and the peanut have been cultivated in one and the same locality, and with some success

These experiments have, however, proved to the more intelligent observer that certain plants will do better in one locality than in another, and that almost every plant and tree requires some peculiarity in soil and climate to bring it to perfection. We will instance the vine, which our readers are well aware yields such widely different results in different situations; and we find that the same can be said in regard to every plant cultivated for use or ornament. These facts being duly considered, it becomes necessary that the experience of our cultivators should be collected, condensed, and presented to the public; and thus serve as a very important guide in the future development of our agricultural and horticultural resources. Unless we profit by the experiences of others, we will always be subjected to unnecessary expense, and serious loss of time must ensue to the general progress and prosperity of the country. The exchange of opinions on horticultural subjects must be limited, so long as we are without a proper vehicle through which we can express ourselves without trespassing on the department of others.

In bringing before the public the "California Horticulturist," we propose to correct this long existing evil, and offer a journal that shall be open to every one interested in the cultivation of our soil, and to horticulturists in particular. In our journal we desire to treat on every subject comprised in horticulture, and while we shall endeavor to be highly interesting to our neighbor who cultivates a few parlor plants, and trains her ivy branches —nourished by a glass of water—around the parlor mirror, we shall seek to supply indispensable information to the owner of the conservatory with its oranges and its camellias; or of the hot-house with its tropical collection. We shall strive to be instructive alike to the admirers of the canary and the goldfinch, whose sweet voices make glad melody in the sitting-room; and to the occupant of the rural residence, with its picturesque landscape, its lakelets and streams teeming with trout, and its woods enlivened with the deer and the quail. We shall distribute information in regard to the management of the kitchen-garden, as well as details for the guidance of the professional grower of extensive fields of asparagus, tomatoes, etc., and make a strong effort to further the interests of our extensive vineyards in all parts of the State, as well as our numerous orchards. The production of silk, the propagation of the ramie, the tea plant, and other important features of horticulture will alike receive our watchful attention. We shall use the greatest care, in giving our readers from time to time, a selection of the best varieties of plants for useful and ornamental culture, with the most approved mode of treatment.

In fact, we will do our best to make the "California Horticulturist" what it should be; and we trust that those occupied in cultivating our soil, and in ornamenting our homes, will favor us with communications on any subject bearing on horticulture, either in support of, or at variance with our own expressed opinion; as in keeping up a constant interchange of thought, and in comparison of experiences, the real merits of many controverted subjects will be brought to light. The knowledge of a single individual, published to a community, may produce a large amount of good to the general public. As a new journal, we will be subject to the same difficulties which every similar enterprise meets with; but we trust that the encouragement which we received on approaching our friends, and those interested in horticulture, on the subject of publishing this monthly journal, may prove an indication of its final success.

CAMELLIA JAPONICA.

The Camellia Japonica is a native of Japan and China, where it grows to the hight of from forty to fifty feet. This exquisite evergreen, was named by Linnæus, the great botanist, after Camelli, a Jesuit, who is said to have first brought it to Europe, in the year 1739. It was first cultivated in England, from whence it gradually spread into Italy, France

and Germany, in the order which I have named. It is now cultivated all over the civilized world, and America, though the last to take up its cultivation, can show as a result, some of its most valued varieties.

The camellia as first known, produced a single white flower, with from six to seven petals; but care and skill in its culture, has so much improved it, that it is now considered the finest production of floral beauty. The form and color of its most exquisite flowers, cannot be surpassed by any plant which we have at present under cultivation. It produces its rich blooms at a season of the year when the scarcity of flowers is so much felt, that it makes it all the more desirable as a green-house and parlor plant. But it is not only the flowers which are so highly esteemed, the foliage in itself, makes the plant the most elegant and choicest of our evergreen flowering shrubs.

The camellia is easily cultivated, and will do well in almost any kind of soil, which is not too poor or sandy. The soil should be rather coarse, and *not* prepared (as is sometimes done) by running it through a fine sieve. If the plant requires repotting, it should be done when the flowering season is over, which will be in the latter part of April or the beginning of May. The transplanting should not be repeated often, as it has an injurious effect upon the flowering. Plants that have remained in the same pot for five or six years, often produce the greatest abundance of flowers.

During the summer months when the plant is out of bloom, it should occupy a shady place; well protected from our strong winds, but at the same time, in such a position as shall give it plenty of fresh, pure air, and keeping the earth moderately moist. It is now, during the summer months, that the flower buds of the camellia are forming; as they advance in size a little more water may be given. The first flowers may be expected in November, and then the plant should be kept closer; plenty of water, a moderately warm temperature, and an occasional sprinkling of the floor, if in a green house, or the plant, if in the parlor, is required. Care should, however, be taken, not to wet the flowers, as every drop of water is apt to produce a yellow spot on the delicate petals of this floral treasure. The worst enemies of the camellia are gasses of any kinds, and a dry hot atmosphere. At times, the professional grower of the camellia, keeps his plants very close, and subjects them to a high temperature; this he does for the purpose of forcing the plants into bloom more rapidly. Such treatment, it is easy to see, must be anything but beneficial to the plants.

To cultivate this choice plant in the parlor or sitting-room, with the most satisfactory results, I would advise the construction of a double-window, somewhat in the style of a show window, which will enable the grower to maintain an equal temperature and exclude gasses, etc. Light frosts will do the camellia no harm, but on the other hand, the hot rays of the sun are sure death to its flowers. The climate of San Francisco is favorable for the outdoor cultivation of the camellia, were it not for the prevalence of our strong winds, which more than counterbalances the good effects of our moderate sun heat. When plants are confined in a room, or the green house; the sun acts more powerfully by reason of the glass, and consequently a great deal of air must be given, especially during a warm day: but care must be taken in admitting air, not to create drafts. The camellia requires that its foliage and buds shall be kept free from dust and insects, which can be done by means of a soft sponge slightly moistened.

If we were asked to lay down short and simple rules, for the successful cultivation of this plant by the amateur; we would advise a shady, temperate position; protection from winds; regular watering; (rather too much than too little, at least during the flowering season,) cleanliness, with plenty of air, and a moist atmosphere created by occasional sprinkling. The propagation of this valuable plant is mostly done by cuttings from the single varieties; they are also raised from seed, and

many new varieties have been produced in this way. The camellia plants cultivated on the Pacific Coast, are all imported from the Eastern States and Europe; generally arriving here in good order.

Professional gardeners cultivate them for the flowers, which are sold here, (in San Francisco) at 50 cents per flower. The white flowers are always in great demand for bouquets, wreaths and the hair. During the camellia season a fine bouquet is incomplete without containing one of these floral gems. The flowers are plucked before they open, and when used for the bouquet, are opened by hand, in this way they keep much longer. The flower is mounted on wire, and always occupies the most conspicuous place in the bouquet or basket.

We can recommend the more extensive cultivation of the camellia, feeling certain that from the simple mode of treatment which it requires, success must follow.

THE PANSY. (*Viola tricolor.*)

C. D. Copeland, says:—"Nothing in the world of flowers is painted with such exquisite beauty or endless variety of coloring, as the fancy or German pansy. They talk, and smile, and look you in the face, with intelligent countenances and cheerful eyes, as though they were creatures of life."

This little pet of the garden is familiar to all our readers. It is indigenous both in Europe and America, and in its wild state in some parts of this country, is quaintly called the "Johnny jump up." Since it has been taken to the fostering care of our nurserymen and professional gardeners it has so rapidly and continuously improved as to have become one of the most interesting of small bedding plants, and should find a place in every garden.

In all Horticulturist's flowers certain features are considered necessary to constitute a perfect plant, so with the Pansy we expect from a well-grown specimen the following characteristics. The flower-stem should be of just sufficient hight to permit the expansion of the blossom above the foliage of the plant, the form of the flower should be round and regular, and the petals should be firm and flat and present a lively contrast of color. The soil for its cultivation should consist of a rich sandy loam mixed with well rotted manure. It thrives best where shade can be given during the hotter portion of the day, and requires copious moisture. While in the Eastern States, the winters are to cold, and the summers too hot, and the cultivators of this little favorite are compelled to be content with its gay beauties during the spring season, the San Franciscan, by providing sufficient shelter from the burning rays of the sun, and abundant moisture, can indulge in the pleasure of a continuous succession of blooming plants during the whole year.

The Amateur Horticulturist must not however be too exacting, the few plants first purchased, which have embellished her parterre for a period of 3 or 4 months with a profusion of elegant blossoms have done good service, and must be replaced by a succession of younger ones which can be procured at a moderate outlay. But should the expense of replanting the Pansy bed be objected to, the plants may be raised from seed in some box which should be placed in a warm and sheltered situation, and covered during cold nights until the seeds are up. This is especially advisable in San Francisco where for weeks during the year the warmth of the sun is insufficient to stimulate the seeds, in which case they decay. Seedsmen are often blamed for furnishing bad seed, when they are entirely innocent, the best of seed will fail by laying too long in the ground. When the young plants are large enough for transplanting, prepare the bed by working it over thoroughly and enriching with well rotted manure, an abundant supply of which should always be at hand. The young plants when planted out will soon make good headway without farther trouble. Seed sown in September will flower in spring; that sown in February, during the summer; and that in May, during the fall of the year. Any very choice or pleasing variety of Pansy may be

preserved by sub-dividing the old roots after flowering 3 or 4 months, these sub-divisions will root freely, and form vigorous young plants, retaining the original tints of the parent plant. The Pansy freely propagates of itself when once introduced into the garden, but the flowers of plants so acquired will be inferior to those raised as recommended. There is no flower more easily cultivated and yet so many gardens are without the Pansy.

A TALK ABOUT FLOWERS.

"In all places, then, and in all seasons,
Flowers expand their soul-like wings;
Teaching us, by most persuasive reasons,
How akin they are to human things."

I was riding once, along the side of a mountain, over a rough, rocky trail. Dwellings of any sort were scarce, and the few miserable shanties we saw were as rude and uncouth as the neighborhood. At one time, however, we passed a cabin, mounted on stilts, looking as if a strong wind would blow it over, or a severe storm wash it into the deep gulch over which it leaned.

My companion, gazing around, exclaimed: "What a place for a woman to live in!" As I saw no sign of human being upon the premises, I was at a loss to account for his astuteness, and ventured to inquire whence came this divining power.

"Why," said he, "no one but a woman would have gathered those flowers, or tried to coax that solitary geranium to live;" and, looking toward the window, I saw, resting on the sill, a broken mug, filled with wild flowers, and near an old box, which served the purpose of a step, was a single geranium, thrifty and evidently well cared for.

I paid a mental tribute to my friend's perceptive faculties, and treasured the incident, slight as it was, in memory of the pent up spirit which sought for an outlet in the mug of flowers, and the fragrant shrub. Depend upon it, there *was* a woman in that rough, board "shanty," a woman whose soul grew weary, sick and disgusted with the barren routine of her life; a woman troubled with an unquiet spirit; whose more refined nature struggled to round itself into completeness, through the medium of her treasured plants.

We Californians boast of our magnificent land; we are proud of our boundless acres, our gigantic groves, our stupendous cataracts, our wonderful *flora*, so unlike that of any other land that we have to make a botany on purpose to suit it; and strangers, passing through our country, say: "Yes, true; all is grand, magnificent; fields of billowy grain stretch away for hundreds and hundreds of acres, but where is the mansion and grounds belonging to this immense estate?" You point to a rickety structure, set upon sticks, containing two, possibly three, rooms; the chickens are cooling themselves under the floor, and the summer sun beats down upon the unsheltered roof. No flower, no tree, no shrub relieves the desolate glare; and, at night, the farmer comes from his toil, smokes his pipe in his shirt-sleeves, and goes to bed before the stars are fairly blinking in the sky, with no thought above or beyond the state of the wheat market, and the prospect of rust in the approaching crop! His wife, if he has such an appendage, is probably as earthy as himself; or, perchance she feels—

"A wish that she hardly dared to own,
For something better than she had known."

And perhaps, if she ever finds time to gaze upon the loveliness of sky and landscape, which the Divine Artist paints for His people, she wonders that *her* life should be so compressed into mere working, eating and sleeping.

Thank Heaven! our farmers are not *all* like this one, although he has many counterparts.

Now, let this man train a morning glory over the door-way, build a porch, and set a honeysuckle beside it, plant wall and gilly flowers in the yard, with here and there a geranium or rose—hardy plants, all of them, that will grow without very much culture. No French gardener will be needed to keep them in order, but the wife and the children will learn new lessons every day from the bright, fragrant blossoms.

Some may call it sentimental, but mark, in a year's time, if our farmer does not seem more cheery. See if he does not sit on the door-

step, under the blossoming vine, during the summer evening, watching the moon rising red upon the horizon, talking with his wife of the plans for the future, and listening to an account of the children's gardens, their little games and pleasures—breathing the sweet perfume, and loth to leave the fragrant night.

Truly, we perceive a change here, and a change that is not one whit an exaggeration. And who shall say this is not the work of the flowers? Who shall say this is not God's way of refining, ennobling, elevating? Where will you find a better teacher than our mother, Nature? Who more fitted to impart divine truth than she? Where can we better study lessons of patience, perseverance and meekness than in her sweet companionship? Truly,

"Flowers ARE wondrously akin to human things."

I believe it is impossible to estimate the influence which flowers and plants possess over us. Frequent association with them teaches us to find, in their varied blossoms, as many friends —nay, far *more* and *truer* friends than any drawing room can afford.

The pansy, large-eyed, cool and unconcerned; the heliotrope, yielding its heart's sweetness, at the sacrifice of its own life; the fuchsia, gorgeous as some Southern houri; the dainty minionette; the bewildering, intoxicating tuber-rose; the thrice friendly, doubly welcome crysanthemum and aster, coming when sweeter flowers have fled, and dull, autumn clouds darken the landscape. Have we not here companions who delight our senses with their beauty, and refresh our hearts with the sympathy of their presence.

He who studies Nature learns from the books of God's Providence, and the child who toddles to its mother's knee, with the "pitty posies," the maiden who fills the parlor vases with fresh blossoms, the man who sets a vine by his door-step, have each marked a text in that precious volume.

Another great source of pleasure is to be found in house-plants. Claiming, as they do, more attention than the out-door plants, they endear themselves to us, as we feel their dependence upon our care. Of these there is, of course, a great variety; for in our equable climate, outdoor and indoor, summer and winter plants are nearly the same. The narcissus, growing upon stones in water, with its golden cup and silver saucer blossom; the hyacinth; the ivy, German, English or rock ivy, trailing its graceful leaves over window and picture; the delicate smilax vine; the msuk plant, with its airy, plumy green, asking only water and light, in return for which it makes itself as beautiful as possible; these are but the beginning of a list that can be lengthened indefinitely, to suit the taste of each cultivator; and for all his pains, all his watchful care, he will as surely be a hundred fold repaid when his treasures have reached maturity.

If people will but cultivate flowers in their gardens and houses, let them grow with their children, let them nod at the little ones as they bend over their books, let them smile at them as they play at their games, let them teach their quaint lore to their youthful minds, and, I doubt not, such a perennial fount will be opened, such a well-spring of faith and trust, reverence and love, as shall never know drouth, even on the most arid plains of human experience. And as winter winds howl, as the rain patters on the roof, and the hail beats upon the pane, we may still have spring and summer with us, in the gentle odors and delightful presence of these "starry friends."

ABSENCE OF THE GREEN COLOR IN THE LEAVES OF PLANTS.

A short time ago my attention was called to a specimen of the redwood *Sequoia Sempervirens* of this State. The specimen was peculiar in having one part of its foliage perfectly white, while the balance was of the usual vivid green. This is a condition which we often see in other plants, especially of the geranium family, etc., plants much sought after by horticulturists, on account of this peculiarity. In the plants last named it seems to be due to a system of cultivation practiced by gardeners, without any definite knowledge as to the relation of cause and effect.

We all know if a plant is deprived of its proper supply of light it will grow up pale and sickly, passing through all grades of color, from its normal green to a perfect white. Yet here is a plant which has not been subjected to this deprivation, growing out in the common light and air of heaven, exposed to all the usual conditions of plants, with one part of its foliage green, while the other is white. What is the cause of this? In no work have I seen an explanation offered, yet there must be some cause for it; nothing in this world of ours is left to chance.

In this paper, I do not propose to give a theory, but rather to call attention to this phenomena, and offer a few points for the consideration of those who study natural history as displayed in the botanical kingdom. The sap of a plant is—so to speak—its blood, and in the same way might we call the blood of animals the sap of their organization. The two fluids play the same economy in the law of nature. The blood of man, we know, has in it two kinds of cells, or corpuscles, the red and white. It is upon the proper adjustment of these cells that health in a great measure depends. By adjustment, I mean the proper and normal passage of the white cells, from that condition into those of red. If we have an over-abundance of the red cells, the condition of plethora or hyperæmia is produced, and this gives us a standard, as it were, above health. If, on the other hand, the white cells predominate—that is to say, so conditioned as to be arrested in their onward development into red cells, we have a state of anæmia, or paleness, being below the standard of health. In one case there is an over-development of the circulating fluid; in the other, an arrest of development.

Now, may not the same law influence the sap of plants? We know that the green color of the leaves of plants depends on a principle called *chlorophyl*, as the blood depends on hæmatin for its color, that the leaves act as the lungs of the plant, that unless the sap has been exposed to the influence of the light and air, it is not suitable for the nourishment of the plant, just as the blood is not capable of sustaining life until it has been ærated in the lungs. Now, taking up the example of the blood, and following it still farther, may not the sap have two kinds or conditions of cells, and that in a healthy condition of the plant the one proper to it predominates, and so the green color is produced. If now we have an unhealthy condition of a plant, or part of it, may not the other cells (being of a lower grade) be arrested in their development, and, taking the ascendancy, produce in the plant (as the undevelopment does in the blood cells) an anæmic state—hence the white color.

My opinion, then, is that this phenomena (whether found in nature, or produced by the manipulations of the horticulturist) is caused by an arrested development in the sap cells of the plants. Whether that arrestment is due to external or internal influences, we at present cannot determine. This is but a crude idea of what is in my mind in regard to this subject, and my only intention, in this paper, is to direct thought to a thing we see every day, and yet for which we have no satisfactory explanation.

WHAT IS WANTED IN CALIFORNIA.

BY CHARLES F. REED.

I feel called upon, briefly to refer to a subject which at the present time is of greater interest to California, and all her producing and industrial classes, than any other. It is an evil which, more than any other, discourages and defeats California energy and enterprise, and disheartens and opposes California industry and labor. I refer to the exorbitant and unwarranted demands of capitalists for the use of money.

In earlier days, when mining was the leading industry of the State, and its only product and export—all the necessaries of life being imported—when men with pick, shovel and rocker could take from the earth from ten to fifteen dollars a day each—when the merchant could realize from fifty to two hundred per cent. profit every time he turned his capital

over, and money was worth from sixty to one hundred per cent. per annum, all seemed to go harmoniously on, for then we had no formidable competitor in our great and only staple export, and the favors of fortune were so fickle and uncertain that none of the rules that generally regulate the regulations of capital, enterprise and labor, seemed applicable to us.

Since that time changes have been gradually taking place in our whole industrial system, and in our relations to and with the outer world. The product of the mines has been gradually falling off, and enterprise and labor have been seeking other channels of occupation. The facilities of travel and commerce and general inter-communication between our State and other countries have been gradually increasing, until with the completion of the overland railroad the revolution is thorough and complete. To-day our great staple products are those of agriculture and manufactures, and wherever, in whatever country, whether at home or abroad, on the Eastern or Western Continent, these products seek a market, then they meet face to face and come in sharp competition with similar products from other portions of the world.

Our wheat has to compete with wheat from South America, the Atlantic States, Russia, the Mediterranean and all other wheat-growing countries. Our wines find competitors in the wines of Germany, France, Italy, Spain and Portugal. Our wool comes in contact principally with the wools of the Eastern States, Europe and Australia, while our silks have to make their way against the old silk-growing countries of Southern Europe and Asia; and our manufactures have to combat the manufacturing capital, facilities and skill of the Eastern States and England.

Thus, nothing we now produce, nothing we now manufacture, can find a market except against the ever present and ever pressing competition of the world.

What then, I ask, must be the necessary conditions of prosperity and success to our agriculture, our manufactures and our commerce?

Our natural advantages for these great industries are not excelled by any other country in the world. We have a soil and climate unsurpassed—our manufacturing facilities are equal to those of any other country, and our location is in the direct path of the commerce of the world. The skill and energy of our people is proverbial. Then what more do we want to prosper, to excel? My answer is, cheap capital and cheap labor.

Give us the former and the latter will follow, for whenever there is energy and enterprise in a country, and plenty of money at low rates of interest, then all the necessary expenses of living, will be cheap, and labor will find constant employment and will be readily and cheaply obtained. Capital in all ages and in all countries is proverbially timid and slow to move, and in this State it seems wilfully and stupidly blind to the changes and improvement that a few years have brought about. What reason and sense is there that enterprise and industry in California should be taxed for the use of capital from twelve to eighteen per cent., while the same capital in Europe and the Atlantic States, or any other portion of the world, cannot command but from three to six per cent., with the same class of security? None whatever. And yet such is the stubborn fact. And in this fact, above all others, lies the greatest impediment to California's rapid settlement—to the development of her boundless resources, and to her upward and onward march to permanent and substantial success and universal prosperity.

PRESERVATION OF WOODEN STAKES AND LABELS.

It is often a source of complaint with gardeners, that stakes and labels made of wood, decay in a very short time; thus leading to confusion in the proper catalogueing of their plants. We propose to give in this article the means by which this annoyance can be avoided. Take in the proportion of one pound of sulphate of copper (blue vitriol), dissolved in two gallons of soft water; in this solution put

that portion of the stakes which is intended to be placed in the ground, letting them remain immersed for twenty-four hours. After removing them from the solution, it is only necessary to let the stakes become thoroughly dry, and they are at once fit for use. Wooden labels may be thrown into the solution for the same length of time, when they will be found so saturated with the metallic salt, as to withstand any amount of moisture to which they may be subjected. This is a very simple method, attended with little expense, and but a slight addition of labor. It has also been advised to cover the lower end of stakes and labels with tar, which is kept for that purpose, in a liquid state. The stakes must be thoroughly dry, as tar has no power of penetrating wood, should it contain even a small amount of moisture. It will also be necessary to warm the stakes in the sun, or before a gentle fire, previous to immersing them in the tar; otherwise the tar forms a thin coating on the outside of the wood, and does not penetrate the wood cells, thus defeating the object sought to be attained. The first method is, however, to be preferred, as it is cheap, clean and thoroughly effective.

WOODWARD'S GARDENS, SAN FRANCISCO, CAL.

An attractive feature of San Francisco, is the famous Woodward Gardens, located about a mile and a half from the centre of the city, and styled by some *the Central Park of the Pacific.* The grounds comprise only five acres, but so arranged by the disposition of galleries and buildings, and the planting of trees and shrubs, as to appear fully twice the size. In comparison with the surrounding country, its barren hill-tops and sandy fields, these pleasant gardens really (more than customary) appear a little "beauty spot" of ornamental character.

Mr. R. B. Woodward, formerly of Rhode Island, having removed to San Francisco, and there accumulated a fortune in active business, purchased the land in 1860, just in the suburbs of the city, as an investment. He gradually added trees, shrubs and ornamental buildings within, in order to form pleasant home grounds, for a future residence.

Their beauty attracted the public attention, and requests to visit them became so frequent, that a special day was set apart each week for visitors; a small charge was made for admission, and the proceeds handed over to the Sanitary Fund during the time of our recent rebellion.

The public attendance became so great, and the reputation of the place having so widely extended, the grounds were at last given up for private purposes, and thrown open to the public for daily visits and pleasant enjoyment, and they have thus become, within five years, the great resort of the people of the city, combining in one entertaiment the pleasures of the park, the garden and the museum.

Directly in front of the entrance is the large Conservatory, with all the smaller ones connecting. There are five in all, supplied with an abundance of plants, gathered from all parts of the world. Here, in one beautiful view from the art gallery, we behold one house devoted exclusively to tropical fruits and palms, the Banana, Plantain, Coffee tree, Tamarind, Pine apple, Rose apple, Alligator pear, Chirimoya tree, eight varieties of Palms, three of Pandanus, while here and there, in the other greenhouses, are scattered Dracænas (eight varieties), Caladums, Begonias, Coleus, Marantas, Crotons, Ferns, Agaves and Aloes, while a few Cinnamon and Camphor trees complete the representatives of the tropics.

In the same series of houses are found trees from a more temperate climate. The Magnolia grandiflora. Camellia japonicas, in many varieties; India-rubber tree in many varieties, the Orange, Lime, Lemon, and Citron trees, six varieties of the Araucaria and the Azalea.

Our American greenhouse plants did not all appear as thrifty as with us on the Atlantic slope; the ornamental leaved plants seeming to suffer greatly. The Coleus was hardly as finely colored as we have here, but the Begonias were overflowing with bloom. It was certainly intensely interesting to behold, grouped into one place, trees from all parts of the world. Here is the India-rubber tree from Central America, fifteen feet high; there the Camphor tree from India; again, the Orange tree from Mexico or the West Indies, and in a corner the Banana or the Sago Palm. The Coffee tree from Arabia and from Australia and Acacias, beyond number, also are gathered there.

Connected with the conservatories is a museum, devoted to curious specimens of stuffed animals and birds. In one of the rooms was a specimen of the *bark* of one of the big trees of California, *thirty-two inches thick.*

In the centre of the large conservatory is a Fine Art Gallery, containing many acceptable paintings, the vestibule to which is lined with tiles painted after the fashion of the olden days of Pompeii and Herculaneum.

In the rear of the greenhouses is a pond devoted to aquatic animals, fish, etc., and for pleasure sailing in

a circular boat. Back of these are the dens and cages, where are gathered living animals peculiar to the mountains and coast, as also some imported from the tropics.

In an adjoining yard, approached by a tunnel under the street, is a large amphitheatre, where stalks the camel and its young, and on stages are chained the panther, black and cinnamon bears, with other living curiosities dispersed at convenient distances.

The gardens have a natural ascent of fifty or more feet, rising first behind the museum and conservatories, on the summit of which is placed a fine Turkish Observatory. From this can be caught a charming glimpse of the entire extent of the gardens and of the crowds beneath intent on solid pleasure. The sides of the hill are planted thickly in trees, and the observatory is hidden from sight save its very top.

In various parts of the garden, along the walks or on the lawns, and particularly in front of the conservatories, are grouped specimens of native and foreign trees, flourishing with the slightest care, and affording a delightful sight to the botanist or tree lover. We saw the Norfolk Island Pine, 10 ft.; Acacia verticillata, 20 ft., from Australia; Acacia linearius, 25 ft., from Australia; Callistema lanceolata, from New Holland; Pittosporum Tobera, from Japan; Cupressus alwsoniana, 20 ft.; Japanese loquat, 12 ft.; Leptospermum lanigerum, 15 ft.; Pinus insignis, 20 to 30 ft.; Veroanica macrocarpa, from New Zealand; European lauruntine; Metaluca decurrata, 25 ft., from New Holland; Melrosio, from New South Wales; Fabiana imbricata, 5 ft.; Japan Spindle tree; Dwarf pomegranate, from New South Indies; Chinese Cypress; Vinca Major, 6 ft. by 8 ft.; Deodar Cedar, 15 ft. high by 10 ft. broad—this tree is remarkable for its beautiful, graceful, drooping habit. Peruvian Mastic tree, remarkable for its large head, 20 ft. high and as broad; Norway Spruce, 30 ft. high.

The short time limited to our stay prevented fuller notes as to the trees and shrubs. It is sufficient to say that beyond a few specimens of native cedars, spruce and cypress, the entire collection of ornamental trees plants, etc., has been gathered from *foreign countries*, and here thrive with perfect luxuriance in the open air. As yet no gardens in the world can present contrasts of so vivid a nature, nor grow trees from sections so widely remote, as has been done here.

In ministering pleasure to the tastes of the visitors who have constantly visited the grounds, Mr. Woodward has unconsciously given a lesson of great importance. He has pointed out the absolute possibility of the introduction of trees from foreign countries, and demonstrated their successful culture.

Ornamental gardening, hereafter on the Pacific coast, will receive an impetus from the influence of these facts, and already we find many streets and public and private grounds adorned with choice shade or ornamental trees from Australia or the islands of the Pacific Ocean.

Was ever a country so gifted as California, where, in one garden, can be grown trees from the snowy summits of the Sierra Nevada, by the side of the tropical palm, coffee and orange; where, too, the apple and pear, from our Atlantic States, thrive; where the cacti blooms with the geranium, where Australian, Chinese and Japan trees twine and droop and mingle their branches together, and still the bear and panther tumble over the lawn, or the beaver works his silent way among the waters of the meandering streams; or the fountain bubbles out its lucent music at the same time with the richer melodies of the Mocking bird.

The grounds have cost, exclusive of land, over $100,000, and still the proprietor is adding every avaliable curiosity suitable to California climate and soil. Future visitors will find the collection of plants and trees deserving of an extended and interesting study. —*New York Horticulturist.*

ORNAMENTAL AND LANDSCAPE GARDENING

SECTION 1.

This subject is of great importance in a new and prosperous country, where rapidly growing wealth has placed at the disposal of men of taste, the means of indulging a long existing desire for the refined embellishments of the garden and pleasure ground, where well selected and contrasted flowering shrubs and plants like the rich setting of a jewel surround the home of his family, blending with their graces, conducing to their health, soothing in their cool freshness, their gentle commingling of color, their rich and varied, yet healthful and exhilarating perfumes, and yielding calm rest and refreshment from the stern business of the day. So much can be said on this subject that we propose devoting from time to time, a considerable amount of attention to it in our columns, and by suggesting various tasty and natural adaptations from the rich treasury of nature, strive to guide and direct the taste of our readers in selecting from thence the ornamental surroundings of their homes in place of the gaudy trapping of meretricious ornament.

Ornamental gardening differs widely from landscape gardening, although it may be con-

sidered a branch of it. By ornamental gardening we understand more particularly the beautifying and ornamenting those small plots which surround our city homes, or certain select and favorite spots in the more extensive grounds of country residences. It is entirely a work of art, limited by space left voluntarily or accidentally, and controlled by various circumstances, while landscape gardening assumes a much wider field, takes hold on a more expanded tract of land, and by availing itself of the natural undulations of surface, and the already existing accessions of wood, water and rock, or by supplying all these where deficient; by dint of experience, cultivated taste, and sundry rules of art, defines and particularizes the beauties, adds new features, softens ruggedness, prunes away redundancies, and by supplying detail when necessary, grouping and arranging trees and shrubs, laying out walks and drives, constructing lakelets and rockeries where such will harmonize and give brilliancy to the scene; it elaborates those gems of landscape beauty attached to rural homes, which we so much admire in older and more settled countries.

To revert to Ornamental Gardening, nothing adds so much to the appearance and comfort of a home as its surroundings when adapted to its style and keeping. Whenever our attention is attracted to a residence, we have an uncontrollable propensity to judge of the taste and refinement of its occupants by the trees, shrubs and flowers surrounding it, and by the manner in which the garden plot is kept. Who does not love flowers? Children love them; quiet, tender and contented people love them; luxurious people admire them when gathered; and whenever we see them in the window of the humbler cottage we argue thence the flourishing of the home affections which require the protection of the same fostering hand.

Our outward life requires them not,
Then wherefore have they birth?
To minister delight to man,
To beautify the earth!
To comfort man—to whisper hope,
Whene'er his faith is dim,
For whoso careth for the flowers
Will much more care for Him.

How often is it the ill fate of the garden plot, in the arrangements made by the prosperous man for relocating his family, to come off worse than second best. We will instance a case. Some one after years of successful toil is about building a home. Like a careful business man he obtains plans and estimates for the dwelling, etc., calculates the cost of fittings and furniture, and allowing a liberal margin for incidentals, sets aside what he considers an ample provision for the enterprise, but what is his experience in nine cases out of ten? Before the accomplishment of his purpose, the expense account foots up from ten to twenty per cent. more than his estimate. He says that he cannot afford it, and immediately curtails expenses where not already incurred. Alas for the Garden! from the very nature of things this is the last of the operations; in the original plan doubtless he had made arrangements for something very good and tasty, most probably a selection had been determined on of the choice trees, shrubs and plants which were to adorn it, but here, doubtless, prudent economy falls most heavily. Instead of preparing the very best soil in sufficient quantity, only just enough is provided to give the surface some appearance, and a few coarse pines, cypress and gum trees supply the place of flowering shrubs and plants, making up in size what is wanting in good taste. Such are the difficulties under which many of the garden plots around San Francisco have struggled into existence. House and lot may have cost say $15,000, fittings and furniture, $5,000, garden expenses probably from $75 to $100. Is there a reasonable proportion in this?

Much has been said of the difficulty of obtaining a good ornamental gardener; we think there is some misunderstanding here. There are many good practical gardeners in California, who thoroughly understand their business; but how often does it occur that a man in every way qualified, has to stand aside for one who undertakes wood-chopping, gardening, horse-cleaning, waiting at table, etc., etc., yet is not competent to dig a potato decently. When we need the services of a carpenter, bricklayer or painter we do not expect any thing of them outside of their professional labor, nor should we of a gardener. A professional gardener

will not beg from house to house for a job.

In the laying out a garden the services of a good gardener are requisite, and it is necessary to take into consideration the nature of the soil. If you have nothing but sand, something stronger and firmer must be added. Good loam and old rotten manure can be readily obtained at a small expense. We should advise first a substratum of clay then a mixture of one-fifth sand, three-fifths loam and one-fifth of old manure to the depth of from twelve to fifteen inches for a small garden. The clay will give more firmness to your trees, and retain the moisture much longer.

If the natural soil is loam, it will require a good manuring to render it lighter and more accessible to air and water. This is the least expensive basis to work on, and many varieties of plants will thrive moderately in it, without the aid of other ingredients; it must however be understood that old manure well incorporated with the soil, is of vast importance for the better development of plants of all kinds in general cultivation.

It is when the surface is of clay that the most extensive improvements have to be made to render the soil even comparatively productive, although it is desirable for several reasons as undersoil for most of the ornamental trees growing in this climate, yet it is objectionable, as a surface till; for very many more, which we will give at some future time. In order therefore to convert a clayey surface into a prolific garden plot it is in the first place necessary to drain, secondly, to trench, and thirdly, by a mixture in equal proportions of sand, manure, and loam to improve the surface soil to the depth of at least six inches.

There are many other ingredients used to improve the condition of the surface till, but they are not often employed: although a certain class of plants will thrive better in one kind of soil; and another class in another kind, yet in ornamental gardening one essential operation is to prepare the ground in such a manner, as will be suitable to the general average of plants cultivated, and if the gardener makes any distinction in the culture of a small garden, he will not do so by giving different soils, but rather by assigning to one plant a different aspect from another, affording, according to the nature of the plant, more or less shade or sun, dryness or moisture, exposure or protection.

When planting trees in a deep sandy soil, more will be required than merely a top dressing of made ground; holes should be dug of from three to four feet in depth, and three feet square; these should be sub-soiled with about six inches of clay or strong loam, and filled up with a compost of clay loam and old manure. For evergreen trees in particular, we would advise strong soil, but less manure, which in no case should be new, as it is very injurious, and should never be used except as a top-dressing, when it serves more as a retainer of moisture than as a fertilizer. The laying out of walks, the bordering of beds, the distribution and arrangement of plants, etc., and the embellishment of the grounds, with other suitable accessories, should be carried out as much as possible in keeping with the style of the residence, having due regard of course to pecuniary considerations; very expensive material can be used for walks, although a cheaper article may be substituted, and this may also be said in reference to the Borders, Plants, etc., but as we intend to be very minute in reference to all these features of ornamental gardening in our future, we will at present leave these matters to the good judgment of the gardener having charge of the work. The most favorable season for laying out grounds is undoubtedly in the fall of the year, and during the rainy season; planting should be done as early as possible, so as to give the newly set out plants the benefit of the early rains, and to allow the made ground time to settle. It is true that where water is at hand all through the year, gardens may be laid out and planted at any time, but it is a well-known fact that a good rain has a much more beneficial effect on plants than any artificial irrigation. Gardening, however, like other matters has to submit to circumstances. Plants should always be provided with proper stakes and labels; the stakes are a protection and we consider them an

ornament when proper use is made of them; the labels are instructive and give a certain finish to the garden.

Having thus lightly sketched through the operation of making a garden; we shall intimate the necessity of keeping it in decent shape and condition. The paths and the borders, the trees, shrubs, etc., and the other embellishments, require to have proper care taken of them. The plants will doubtless put forth new shoots and flowers, and increase in beauty, but the garden should never lose its first finish. This attention can be easily given by the amateur himself, if he has time and inclination, but if otherwise a gardener may readily be found who will do the work well for a reasonable consideration per annum.

At some future time we shall give a selection of plants for the flower garden, comprising such as are generally esteemed for beauty of flower, fragrance, ornament and habit; in this we may be influenced to some extent by our own fancy, particularly in regard to varieties; but we shall endeavor to be impartial and just.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

During the week of the late Horticultural Fair in this city, circumstances occurred demonstrating the paramount necessity for combined action on the part of all interested in horticulture on this coast, and, a meeting having been suggested, about fifteen gentlemen responded to the call. The result of their deliberations was a resolution to form a Horticultural Society, and they elected a committee of five to draft a Constitution and By-Laws.

At a subsequent meeting held for the purpose of receiving the report of the committee, the Constitution and By-Laws which they had prepared, were, after some slight amendment, adopted; and those present proceeded to elect the following officers for the ensuing year:

President, H. N. Bolander; *Vice-President*, E. L. Reimer; *Secretary*, F. A. Miller; *Trustees*, R. Turnbull, C. Schuman, F. A. Herring.

The Constitution and By-Laws, which are published in another column of this magazine, will give our readers an idea of the objects and *modus operandi* of this Institution. For the present, the meetings of this Society will be held at the rooms of the Academy of Natural Sciences, on Clay street, but it is intended, at as early a date as possible, to establish a reading-room, where its regular meetings will be held. The purposes of this association are to collect and compare practical experience on all horticultural matters on this coast; to promote discussion on all subjects of importance relating thereto; to ascertain and promulgate the best method of treatment of our various trees, shrubs, plants and flowers, and to seek, by correspondence and experiment, the introduction of new plants, etc.; thus facilitating the more extensive distribution of the knowledge so much needed in a new country. The utility of a Society of this kind can scarcely be over-estimated, and whoever takes an interest in the cultivation of the soil generally, or in the propagation of any horticultural specialty, must be interested in its prosperity and should seek, by becoming a member of this Institution, to materially aid its progress by his influence, experience, and pecuniary assistance; he will thus doubtless benefit himself, and conduce to the public good.

The Horticultural Society of Massachusetts at present consists of 498 life and 1,002 annual subscribers, making a total of 1,500 paying members. Amongst them we find citizens of every class, from the wealthiest to those of comparatively restricted means; all are able to contribute the small amount required by the rules of the Society.

We anticipate rapid progress for this new Association, and are sanguine that it will number 500 members ere it enters on its second year of existence.

Club Root in Cabbages.—It is stated that bone dust applied at the rate of 2000 pounds to the acre, has been found a complete preventive of this disease.

THE LATE HORTICULTURAL EXHIBITION AT THE PAVILION IN SAN FRANCISCO.

The Horticultural Exhibition of August last, under the auspices of the Mechanics' Institute, was the second of its kind on the Pacific coast, and when the want of experience, and the short space of time which had intervened for preparation, between the invitation to exhibit and the opening day, are taken into consideration, we are justified in pronouncing it a success. The display of shrubs, and plants, flowers, fruits and wines, was very effective, and many of the specialties were highly interesting. We think, however, that the selection of Monday as the opening day was a serious mistake. The material for exhibition being rapidly perishable, the florists and fruitmen found it impossible to make those preparations simultaneously which could have been made, had Wednesday been the day appointed.

On Monday, August 29th, at 3 P. M. Mr. Hallidie, the President of the Mechanics' Institute, commenced the exercises of the day by stating that the time permitted to preparation for the exhibition had been very limited, but he hoped nevertheless that the display would be admitted to be highly creditable to our California productions. The First Exhibition took place in 1857 at the Old Pavilion on the Lick House Block, unfortunately, like the century plant, the Horticultural Society of that date expired after its one great effort. He hoped that the present Exhibition would give birth to a Society that would take firm root in the prolific soil of San Francisco, flourish as the primest of the plants around them, and bear fruit as satisfactory as the choicest specimens on exhibition.

After a prayer from Dr. Stone, and the inaugural address of Professor Carr, the President declared the Exhibition opened, and while the Band enlivened the gay scene by discoursing many *recherche* passages of sweet music, the visitors dispersed around the building to inspect and admire the choice productions displayed before them. The attendance during the evening was numerous. During Tuesday and Wednesday articles for exhibition continued to flow in from the country, the concourse of visitors daily increasing until Thursday, when the display was complete, and the highest attendance attained.

The principal professional exhibitors in the floral department were: E. L. Reimer; J. Hutchinson; Ed. E. Moore; T. Appleby; Wm. Meyer; Chas. Schuman; J. O'Hara; M. Allen, and G. Gustavson of Kelsey's nursery.

Of amateurs Mrs. Curtis, and Mr. Upton deserve especial mention.

An interesting feature of the exhibition was the century plant (*Agave Americana*) presented by General Kirkham, occupying a very conspicuous position in the centre of the fountain. In connection with this department we must also mention the exhibition of a design illustrating the principles of landscape gardening, by F. A. Miller, landscape gardener.

The Fruit Department was well represented by the following gentlemen:

Lewelling & Son, San Lorenzo; Hutchinson, Marysville; Fox & Varney, Santa Clara; B. F. Headen, Santa Clara; R. B. Woodward; Gould, Santa Clara; S. Wing, Napa; R. S. Thompson Napa; West Bros, Stockton; J. W. Paterson, San José; M. Keller, Los Angeles, and P. D. Code, exhibitor of canned fruits.

Fine vegetables were on exhibition from D. L. Perkins, of Sherman Island, and W. H. Marsh, of Napa.

The display of Wines and Brandies was extensive, the principal exhibitors were, I. Landsberger & Co.; Eberhardt & Lachman; A. Finke; P. N. Bugbey; The Lake Vineyard of Los Angeles; The United Anaheim Winegrower's Association; F. Schleifer & Co; The Orleans Hill Vinicultural Association; Bowen Bros; and M. Keller, of Los Angeles.

The miscellaneous department also comprised many articles of great interest, including California silk and cocoons, flax, ramie plant, tea trees, sorghum, hops, rice, goma and paper plant.

Saturday, the 1st of October, was the closing

day, when the following awards were announced.

AWARDS.

CLASS ONE—WINES.

The Committee appointed to inspect the exhibits of California wines at the late exhibition, held under the auspices of the Mechanics' Institute, have submitted their report as follows:

WHITE WINE.

United Anaheim Wine Growers' Association—Best white wine of 1870.

Orleans Hill Vinicultural Association Best white wine of 1869 (equally as good as the above, but foreign grape).

Lake Vineyard of Los Angeles—Best white wine of 1868.

O. W. Craig (H. D. Dunn, Agent)—Best white wine of 1867.

Jacob R. Snyder (Bowen Bros., Agents)—Best white wine of 1866.

CLARET.

Migharacca—Best red wine of 1863.

M. Keller—Best red wine of 1868; also of 1867; also of 1866.

PORT.

Orleans Hill Vinicultultural Association—Best port wine of 1869.

Lake Vineyard of Los Angeles—Best port wine of 1868; also of 1867.

SHERRY.

George West—Best Sherry Wine of 1868: also of 1866.

CHAMBERTIN.

P. N. Bugbey—Best Chambertin (foreign grape) of 1868.

ANGELICA.

M. Keller—Best Angelica.

BEST SPARKLING WINE.

First Premium—I. Landsberger & Co., Muscatel.

Second Premium—I. Landsberger & Co., Private Cuvee.

Third Premium—I. Landsberger & Co., Dry Champagne.

Fourth Premium—J. Finke, sparkling wine.

BRANDY.

F. Schleifer & Co.—Best brandy of 1869.

M. Keller—Best brandy of 1868; also of 1867; also of 1866.

MISCELLANEOUS WINES.

Eberhardt & Lachman—Cucumongo wine.

S. W. Shaw—Muscatel.

Eberhardt & Lachman—Muscat.

O. W. Craig—Malaga.

Lake Vineyard of Los Angeles—Sultana.

Orleans Hill Vinicultural Association—Riesling of 1866 and 1869.

B. D. Wilson—Bottle of fine old port (twelve years old).

P. N. Bugbey—For a variety of fancy brands of sweet wines.

BITTERS.

M. Keller—Best Wine Bitters.

Eberhardt & Lachman—Best cocktail bitters.

I. H. Wormser—Best root bitters.

The Committee recommended that diplomas be awarded to all of the above, for the reason that they have entered the best wines and liquors for competition.

Samples of sparkling wines only are selected from stock in store for exhibition.

The committee, not being able to argue upon the subject of awarding the grand prize, asked further time. They will submit a supplementary report, when they arrive at a definite conclusion.

CLASS TWO—FRUITS.

Lewelling & Son, San Lorenzo; best general display of fruits, diploma.

Hutchinson, Marysville, best specimens of peaches, $40.

Fox & Varney, Santa Clara, best exhibit of apples, $40.

B. F. Headen, Santa Clara, second best exhibit of apples, $20.

R. B. Woodward, best specimens of apples, ten varieties, $10.

Smith, of Sacramento, best exhibit of pears, $40.

Fox & Varney, Santa Clara, second best exhibit of pears, $20.

Hutchinson, Marysville, best specimen of ten varieties of pears, $10.

Fox & Varney, Santa Clara, best exhibit of plums, fifteen varieties, $25.

Gould, Santa Clara, second best exhibit of plums, $20.

Hutchinson, Marysville, best exhibit of foreign grapes, $50.

S. Wing, Napa, second best exhibit of foreign grapes, $20.

R. S. Thompson, Napa, third best exhibit of foreign grapes, $10.

R. S. Thompson, best exhibit of Mission grapes, $10.

West Bros., Stockton, exhibit of foreign grapes, special premium, $30.

Gould, Santa Clara, best exhibit of quinces, $10.

Hutchinson, Marysville, best exhibit of figs, $10.

J. W. Paterson, San Jose, best exhibit of California oranges, $15.

M. Keller, Los Angeles, best exhibit of lemons, $10.

Fox & Varney, best exhibit of strawberries, $7 50.

Fox & Varney, best exhibit of blackberries, $5.

Hutchinson, Marysville, best exhibit of dried fruits, silver medal.

J. W. Patterson, San Jose, best exhibit of cured prunes, diploma.

Hutchinson, Marysville, best exhibit of figs, cured, diploma.

P. D. Code, San Francisco, best exhibit of canned fruits, diploma.

Signed by Messrs. Nichols, Perkins, Anderson and Feeley, Judges.

CLASS THREE—VEGETABLES.

D. L. Perkins, Sherman Island, best single varieties of early potatoes (Early Rose), $3 00.

D. L. Perkins, best exhibit sweet corn, $3.

D. L. Perkins, best exhibit water melons, $3.

D. L. Perkins, best exhibit beets, $3.

W. H. Marsh, Napa, best exhibit of squash (two varieties), $3.

W. H. Marsh, for fine specimens of growing corn, $3.

CLASS FOUR—FLOWERS.

E. L. Reimer, San Francisco, best and largest collection of plants for lawns, gardens and conservatories, $100.

T. Appleby, San Francisco, best collection of evergreen trees and shrubs, $50.

Edward E. Moore, San Francisco, best collection of decorative plants of newest varieties, $50.

J. Hutchinson, Oakland, best collection of climbing plants, $25.

T. Appleby, San Francisco, best collection and variety of bedding plants of verbenas, dranthias, petunias and pansies (twelve of each), $25.

Charles Schuman, gardener of R. B. Woodward, Esq., best collection of twelve colored leaf plants, $25.

J. Hutchinson, Oakland, best exhibit of cut flowers, $25.

W. Meyer & Co., San Francisco, best exhibit of round or flat boquets, $25.

Mr. Miller, San Francisco, best design illustrating principles of landscape gardening, $30.

Awards to non-professional growers:

E. A. Upton, best display of dahlias, fuchias, Petunias and dranthies, elegant flower stand.

E. E. Moore, San Francisco, best collection of gladiolus, a diploma.

General Kirkham, donation of century plant, award book—"Wonders of the Sea."

E. L. Reimer, San Francisco, beautiful arrangement and display of plants, a diploma.

T. Appleby, San Francisco, collection of hollyhock roses, and dried and ornamental grasses tastefully displayed, a diploma.

W. Meyer & Co., baskets of flowers, a diploma.

Kelsey's Nursery, cultivated by G. Gustavson, Oakland, collection of deciduous forest trees and miscellaneous plants, a diploma.

J. O'Hara, San Francisco, general collection of ornamental trees and shrubs a diploma.

Charles Schuman, gardener to R. B. Woodward, grandest display of tropical plants, trees, etc., a diploma.

Mr. Allen, San Francisco, meritorious display of flowering plants, a diploma.

J. Hutchinson, Oakland, splendid collection of greenhouse plants, a diploma.

Mrs. Tyler Curtis, rare Japanese and hothouse plants —award Robinson's Alpine flowers.

CLASS FIRST CEREALS

W. Hunt, Oakland, best collection of oats, $5.

D. L. Perkins, best specimen of corn in the ear, $5.

D. L. Perkins, honorable mention for very superior wheat.

MISCELLANEOUS.

Class Six—California Silk Culture Company, best specimen of silk (raw), a diploma.

W. H. Baxter, best specimen of unperforated cocoons, $20.

D. L. Perkins, Sherman Island, best specimen of flax, $10.

J. S. Finch, best specimen of ramie plant and fibre, $15.

J. H. Schnell, El Dorado, best specimen of tea plants, $20.

J. H. Purdy, best specimen of sorghum sugar $5.

Isaac Bird, San Josè, best specimen of hops, $5.

J. H. Schnell, mountain rice, goma plant, and paper plant, a diploma.

D. L. Perkins, 138 varieties of seeds, silver medal.

W. F. Swacy, San Francisco, California bonzest, a diploma.

W. J. Laveny & Co., very fine sample of starch, a diploma.

Bowen Bros., San Francisco, mountain honey and pop corn, a diploma.

This display of Horticultural, Pomological and other like produce, has been highly satisfactory; it was well attended throughout, and was highly creditable, alike to the officers of the Mechanics' Institute and to the exhibitors.

One immediate result of the exhibition has been the organizing a Horticultural Society—the subject was taken into serious consideration, the necessity for such an Institution demonstrated, and the Bay District Horticultural Society of California, of which mention is made in another column, was inaugurated.

We hope that our late exhibition is the initiation of a new era in horticulture on this coast.

POPULAR BOTANY.

CHAPTER I.

It is our purpose in a series of papers, of which this constitutes the first, to give as far as may be possible, an insight into the nature and character of the science of Botany. We shall endeavor to so simplify it, as to make it intelligible and interesting to all. At the same time we shall hardly claim originality, as it is our intention to give but an epitome of the text-books, clothed somewhat in our own language. From all time, the beauties and usefulness of the botanical kingdom, has impelled mankind to its study; a study that involves the fairest part of nature. Truly has it been said that the flowers are the alphabet of the angels, speaking as they do, to the hearts of all, in language of innocence and love. In the far east, where Flora seems to have had her treasured home, the people wove fairy legends around each leaf and opening bud, using them as emblems, and messengers of love and friendship, sorrow and joy, victory and war. Nature is divided into two grand divisions, namely organic and inorganic. The inorganic repre-

sented by metals, soils and the different rocks, have characteristics that at once claim our recognition at all times and in all places. It was Everett, who, in one of his speeches, drew a vivid comparison between the two divisions, worthy of being recorded in letters of gold. "In one hand I hold a grain of gold, and in the other a grain of corn. I place the first in the ground, and it remains for unnumbered years, the same grain of gold. I now place the corn in the earth and lo, a marvel! the little seed softens and swells, sends up a bright green shoot, which, by a wonderful process of nature's laboratory, evolves the perfect plant, to be at last crowned with millions of the same golden grain." The organic is again divided into two kingdoms, vegetable and animal. Plants are the connecting link between the inorganic world and animals. By their rootlets they slowly and surely take to themselves the different mineral salts necessary for their growth, and they are in turn consumed by the animal kingdom, so producing bones, muscles and nerves.

Thus we can readily trace out, the chain of nature, that reaches from the senseless clod of earth, to God's highest creation, *Man.* Botany is divided into *Physiological* which treats of the structure of plants, and their mode of growth; and *systematic*, which is the study of plants in their relation to one another. The physiology of plants claims our first attention, as it is the ground work, so to speak, of their study. All plants are made up of certain parts, such as the roots, stems, leaves, flowers and fruits. These, on closer inspection, are found to be made up of smaller parts, and these parts of still smaller portions. We find on examining these latter with the microscope, that they are formed of cells, and so have received the name of cell tissue. The plant is then, as Gray expresses it, "built up much as a wall is built of bricks." These cells are very rapid in their growth, being formed in some plants, at the rate of several millions daily. How cells are formed in the first place, is still involved somewhat in doubt: When once formed, however, they have the power of producing others to an almost unlimited extent. This reproduction or duplication of themselves, takes place in a number of ways. Often it is by a kind of budding, in which the new cell shoots out from the side or end of the old cell, somewhat as the branches in plants, again it is done by the walls of the parent cell contracting in one part to such an extent, as to cause a division, and so producing two cells out of the original one. This process, called spontaneous fission, will continue in the new cells, and so a vast number may, in a very short time, be really formed from *one* original cell.

The lowest forms of vegetable life consist of a number of these cells placed end to end; and some, as the "*Diatoma*," are made up of but a single cell.

Plants that elevate themselves above the ground, such as shrubs, trees, etc., require a higher organization, and so we find another kind of tissue is introduced, and blended with the cellular. This is called *Woody Tissue*, or *Fibre.* When we come however, to examine this woody fibre, we find it but a modified form of the cell tissue, and that it is formed of closed cells, drawn out into tubes or cords. The walls of this woody fibre are thicker and stronger than cell tissue, and its toughness is still further increased by age. It is this difference between young and old woody tissue, which has given rise to the terms *Sap-wood* and *Heart-wood;* the first standing in the relation of younger brother to the latter.

There are yet other forms of tissues in plants, that become more complex in their developments, as they advance in the upward scale of vegetable life. These are comprised under the general head or term *Vascular Tissue*, and consist of spiral vessels and ducts. The cells and vessels of a plant contain the sap and juices necessary for its growth; upon them devolves the duty of elaborating and distributing the sap to all parts of the plant.

That portion of a plant that is exposed to the air, is covered with a skin or Epidermis; this skin is but the outer layers of cell tissue, with their cells in a state of firm cohesion, that is, pressed close to one another, and so forming a complete and uniform covering to the plant.

PROPAGATION OF AZALEAS.

Azaleas are easily propagated by cuttings, which should be put in when the young shoots attain their full length and have the base rather firm, or what is known as half ripe. They should be from three to four inches in length, cut transversely below a leaf, and have the leaves removed half way up the cuttings. Insert them round the sides of a pot, placed in one of larger size, and so that the rims of both are on the same level. The cutting pot should be well drained and filled to within half an inch of the rim with a light and moderately rich loam, and about half an inch of clean sand on the surface. The space between the pots is to be filled with crocks to within an inch of the rims, and then filled in with sand. Insert the cuttings up to where the leaves are left, give a gentle watering, and when dry, cover over with a bell-glass, which will rest on the sand between the pots; plunge the pot into a hot bed of from 70° to 75°, keeping close and shaded. The cuttings will be well rooted in six weeks, then remove the bell-glass, taking care to do it by degrees, so as not to lower the temperature too rapidly before the plants can accustom themselves to the change. When the young plants are well hardened, pot them singly in small pots, and keep them in a gentle heat until they are well established; then remove them to a cool house or green-house.

When growing and flowering, Azaleas require to be plentifully supplied with water, and at other times the soil must be kept moist, but only apply water when the soil is becoming dry, and before the foliage flags, then give enough to show itself at the drainage.

FLOWERING SHRUBS.

That section of Ornamental plants which are familiarly known as shrubs, is usually divided into two classes; one of which comprises such as are cultivated for the elegance of their foliage, their grace of form and habit, or their robust and picturesque growth when under training as specimens, or as undergrowth; the other, which contains those fostered for their showy and fragrant flowers. It is of this latter class we intend to treat particularly in this number of the Horticulturist.

Those of our readers who have gardens large enough to admit a number of flowering shrubs, will find it one of the most desirable points, to have as far as practicable, a succession of flowers throughout the year. We shall therefore call their attention to the importance of selecting those shrubs which will give an abundance of blossoms during the different seasons; and in order to make the selection the easier, we shall sub-divide flowering shrubs in three sections, based on their time of flowering, which may be influenced by the mode of treatment they receive with the pruning knife. Section 1, comprises shrubs which produce their flowers from wood of last year's growth, and bloom during the early part of spring and summer. Section 2, includes those which develop their flowers from the present year's growth, and bloom during the latter part of summer and fall. Section 3, consists of those which continue in flower nearly the whole year, and are mostly evergreen shrubs.

In section 1 we include the Calicanthus, Deutzia, Ligustrum, Philadelphus, (Mock-orange) Spiræa, Syringa (lilac), Viburnum (Snowball), Weigelia, Rosea, Althea (Rose of Sharon), Pyrus Japonica (Japan quince), Flowering Almond, Ceanothus, Tamarix, Berberis, Cornus, and many others, all of which are deciduous, that is, they shed their leaves in the fall of the year, and remain dormant during the winter. Great care should be taken in the pruning of this class of plants; nothing should be removed by the knife from these shrubs, except superfluous wood, and if any more extensive pruning has to be resorted to, it should be done immediately after the flowering season is over. We often hear the complaint that the Snowball or the Lilac produces no flowers, or at least so few of them, that the plant is not considered worth a place in the garden. We are certain that the fault lies not in our soil or climate, but in the improper

pruning of those shrubs by incompetent gardeners, their nature and habits not being known by them, and the very branches which should furnish the flowers are ruthlessly cut away. We advise those of our readers who have any of these flowering shrubs in cultivation, to imperatively forbid such ruinous treatment, if they wish to enjoy a fair harvest of flowers. All shrubs mentioned in the above list, bloom in the earlier part of the season, from February to June, and the varieties enumerated are the most popular; all of these will do well with ordinary care.

Some may differ from us when we say that these shrubs develop their flowers during the early part of spring and summer, and may endeavor to establish a contrary opinion by instancing a Philadelphus (Mock orange), which was in bloom at Mr. Robertson's, on Folsom street, during the month of October, or by referring to a Snowball which is now in bloom on Sutter street, in this city; but we consider these instances as exceptions caused by peculiar circumstances. Almost any plant can be forced into bloom by omitting to water it for some time; and then subjecting it to plentiful irrigation. Again, a plant may have been pruned at the wrong season, by which treatment the wood which should produce the flowers, may not have developed itself sufficiently to bring forth healthy and abundant flowers at the proper season; this latter was undoubtedly the case with the Snowball, and the result is very scanty flowers.

Section 2 includes the Cytissus Potentilla, Spiræa Douglasii, (Bridal wreath) Lagerstrœmia, (grape-myrtle) Cratægus, Cestrum, Eupatorium and others. This class is not as numerous as the former, and the varieties do not give as much satisfaction, yet an extensive garden should not be without some of them, so as to secure a continuous flowering. The time for pruning and trimming this class of shrubs, is early in Spring before the sap rises.

The third section includes a large number of species and varieties which on account of their evergreen foliage have grown in favor with us. The flowers of this class are neither as beautiful nor as fragrant as of those mentioned under section 1, with the exception of those which are grown under glass, but as we are treating only of outdoor plants in this article, the denizens of the greenhouse must be referred to a future time. The most popular varieties of section 3 are Polygala, Laurustinus, Abutilon, Brugmansia, Diosma, Erica, Fabiana, Hydrangea, Lantana, Myrtus, Metrosideros, Nereum (Oleander), Plumbago, Pittosporum, Swainsonia, Veronica, Bouvardia, Daphne, and many others; some of those above enumerated bloom during the greater part of the year, summer and winter, although they flower more profusely in one season than another. Most of them can be cultivated into any desirable shape or form, some of them are well adapted for hedges, while others can be trained over frames or walls.

In California we observe that shrubs of the 3d section are almost exclusively cultivated; but although the varieties enumerated in that subdivision are entitled to extensive consideration, yet those comprised in section 1, are equally valuable, and in some respects far preferable; and when, and wherever our readers have succeeded in bringing them to perfection in the development of their flowers, they will coincide with us in opinion.

Editorial Portfolio.

In assuming the editorialship of the "California Horticulturist," we do so with a full knowledge of the difficulties and perplexities we shall have to encounter. It is an easy matter to inaugurate a new enterprise, but quite another thing to carry it out successfully, or even with satisfaction to its projectors. Time tries all things, and measures out, with its inexorable march, success or failure. Right here, let us state that it is not our intention to fail; that we intend to make this journal a success, such as California may be proud of. We have before us a wide and uncultivated field, and it is our purpose to so work it as that it shall—like all California fields—yield glorious fruits.

It is with pride that we point to our first number, rich and replete as it is with golden promise of the future.

In publishing this journal, it is not our intention to make a fortune, but simply to further the interests of horticulture, and foster a taste for the true and beautiful in nature. True, we shall expect, and hope to at least meet our current expenses, and for that purpose we appeal to all true lovers of horticulture for their support. We ask not only subscriptions, but also communications from all interested in the horticultural and agricultural interests of the Pacific Coast. Articles of all kinds bearing on the subjects which we propose to treat of, will be thankfully received, and given a place in our journal. To all of our horticultural and agricultural brethren, we give hearty greetings.

The Bay District Horticultural Association.—Second regular meeting held on Saturday, October 29th, 1870, at the rooms of the Academy of Natural Sciences, No. 622 Clay street. After the transaction of some important business, nineteen new regular members were admitted. On motion it was resolved that the Secretary be authorized to have the Constitution and By-Laws printed for the use of members, and new candidates.

A lengthy discussion took place on Rules and Regulations of exhibitions to be held by the Society, but the matter was finally laid over for one month, as it was considered desirable to have the opinion of gentlemen from various parts of the country expressed.

Professor H. N. Bolander, stated that he would inaugurate discussions on Horticultural subjects, by a lecture on the Coniferæ of the Pacific coast, at the next regular meeting, to take place on the last Saturday of November next.

Acknowledgements.—We have to return our acknowledgements to R. B. Woodward, Esq., for his many acts of kindness, and in placing at our disposal the use of his very valuable collection of books and periodicals. Also, to W. Meyer & Co., No. 27 Geary street, for material assistance in the furtherance of our project. E. L. Reimer, nurseryman, has also placed us under great obligations for much valuable assistance and information; while last, though by no means least, we are indebted to W. F. Norcross, of the *New Age*, for the practical advice and aid which he has given us.

Horticultural and Agricultural Exhibitions.—Fairs and Exhibitions seem to grow in favor with our Eastern friends, as well as with the people of this coast. While the character of these numerous fairs, as a general thing, do not come up to the expectations of the professional grower and producer, still a great deal of good is nevertheless accomplished. From year to year, our efforts in this direction will meet with better success, and we hope that the general interest in the promotion of our agricultural and horticultural developments will steadily increase.

Small Gardening.—It is often remarked by lovers of horticulture, that want of space and the expense, prevents them from indulging in this pleasant pastime. To show what can be done when there is a true will, we have only to instance a case in this town: A gentleman ("a city clerk, but gently born and bred") living in the southern part of this city, has, at a cost of about twenty-two dollars, erected for himself a green-house. In size, it is five by eight and one-half feet. He has in it one hundred and twenty varieties of plants, grown by himself, and all in an excellent state of cultivation.

Canary Birds.—The asthma, *alias* the "pant" of these birds is said to be cured by feeding them entirely upon hemp seed. Cannot some bird fancier give his or her experience in the treatment of this troublesome and common disease? The editor of this journal once had a bird (we say once, as it is now no more) afflicted with "asthma," and, in course of time, it died. We, being of an inquiring turn of mind, made an "autopsy" upon it, and found in the upper part of its wind-pipe, two small, white, *parasitical worms*. They were about two lines long, but capable of lengthening them-

selves to the extent of half an inch. Can any of our readers tell how they came there, and whether they had anything to do with the "asthma," under which that editorial bird suffered, and at last died?

Time of Repotting Azaleas.—The best time for repotting azaleas is after flowering, or when they are commencing to make fresh growth. They may also be potted after the growth is complete.

Vines infested with Coccidæ (*Mealy Bug*).—A great many inquiries have been made as to an effectual method for removing the "Mealy Bug," which seems to infest the grape vines, (especially those grown under glass) to a great extent in this country. Many remedies have been recommended, but nearly, if not all, have contained certain ingredients, which, while they destroyed the "Mealy Bug," also injured the vines. We can recommend a preparation which will answer the purpose in all respects as to the "Bugs," and at the same time, have no bad effects upon the leaves or buds of the vine. First remove all the loose bark and rubbish of the vine; then wash them with a solution of 3 ounces of Clark's insect destroying compound, to a gallon of water, and about a dozen drops of spirits of turpentine. Apply this solution with a stiff brush, so as to have it penetrate every hole and crevice, taking care not to destroy or rub off the buds.

The wood-work should be well cleaned, and the walls whitened, using the solution above mentioned, with the lime. This operation ought to be performed twice; once before the buds commence to swell, and again when they are showing signs of development, this being the time when the "Bugs" emerge from their hiding places, on account of the increasing temperature. If the method we have mentioned is adopted, the "Mealy Bug" will surely disappear.

Earthquakes.—Earthquakes have been rather scarce this fall; in fact entirely absent, with perhaps the exception of one or two slight vibratory thrills. Their place seems to have been filled (acceptably to us) by the "aurora borealis." Is not here a clue to the electrical theory of earthquakes? Who can tell? and furthermore, who will follow it up?

Correspondence.

All communications intended for this column must be addressed to the editor of "The California Horticulturist," 418 Kearny street, San Francisco. Correspondents are required to be brief and concise as possible, stating their questions in such a manner, as shall allow of their being answered with satisfaction to the editor, as well as to themselves.

Editorial Gleanings.

Tea Plantation.—It will be remembered that, two months ago, we reported, from inspection, that success had not attended the tea plants at Calistoga. A party interested gave a different narrative. The variance grew out of difference in judgment as to the degree of prostration from which such plants may or may not recover. Now we have corroborative testimony confirming our judgment. The editor of the Vallejo newspaper has just examined the plantation, and pronounces it a complete failure. He says only a few tea plants are alive, and they are sickly and unpromising. The editor pronounces against the locality. But that is not in fault. The plants reached there in sinking condition, having lain a long time in our Custom House after the trying voyage from Japan: several weeks, we are told. Had they been destined for Calistoga, and planted there without unreasonable delay, it would have been a fair test. But they were sent here for sale, and finding no market, they were sent to Calistoga in hopes of saving them. In this there is disappointment. But the land and the climate may be all right for tea plants, properly delivered.—"*Alta California.*"

Cabbages—American and Foreign Varieties.—Recently we visited a farm upon Long

Island, to examine a crop of cabbages which had been raised for Mr. Dreer, of Philadelphia, for the purpose of testing the most popular European varieties by the side of our own. There were some 30 varieties grown in field culture, and in sufficient quantities to show what they would do as a crop. They presented a wide range of quality, from perfectly worthless to very good. There were only two or three that seemed to be worthy of further trial. The result of the experiment is, that we have little to gain by going abroad for our varieties of cabbage. Several of the European varieties have been so modified by culture in this country that seed of the same kind grown here is vastly preferable to the imported. Some of the Long Island farmers have local varieties, or strains, which they have obtained by selection, in which earliness and solidity are combined in great perfection.—"*American Agriculturist.*"

Pomologists in California.—Our pomological friends in California are enjoying a visit from some of their distinguished eastern brethren. We doubt not that the visitors on their part are highly enjoying themselves; and we know none better able to appreciate the horticultural wonders of California than such gentlemen as Wilder, Downing, Barry, and Ellwanger, who, with others, compose the party. Perhaps this visit may lead to a meeting of the American Pomological Society upon the Pacific coast in 1873.—"*American Agriculturist.*"

Curiosities of Vegetable Life.—We have often urged our farmers to raise native seedling trees, with a view to getting stock that will better suit our climate, than trees coming from countries so different as the Atlantic slope of our Continent.

A hint in this direction comes from Los Angeles county. This year all trees of imported stock belonging to the plum, peach, apricot, pear, and cherry varieties, showed no disposition to leaf or to flower at the usual time in April. It was not till August that they began their vernal evolutions. They will bear no fruit this year. Cherry trees never fruit in the lower counties, though they flower abundantly.

Mustang trees of the varieties named were not so affected. Fruit trees that come by chance from stray seed, are called Mustang. It is noteworthy that, among the Mustang peaches particularly, the sweetest and most juicy fruit is found: and it is a fact that the greater portion of our grafted apples and pears are showing defects pointing to extinction. This subject should be earnestly considered by our horticulturists.—"*Alta California.*"

Success of California Agriculture.—The California fruit trade has become quite an important traffic. But already the markets are objects of a little uncertainty. The Eastern exportation has resulted so indifferently, whether to Chicago, or to the far East, that San Francisco and Sacramento are considered more profitable. Plums are plentiful and very cheap. Apples give but an indifferent promise. Grapes are suffering from the heat. This rapid success of the land of gold in farm produce is a social phenomenon worthy of more than casual remark. High wages and scarity of labor have been no bar in this case to production, while elsewhere these conditions are deemed indispensable.—"*New York World.*"

The Horticultural and Pomological Exhibition.—The report states that the Concert preceding the Exhibition, and the Sanitary Fair following it so closely, had a modifying effect upon its receipts. The report of the Committee is flattering to the exhibitors. The receipts were: Admission tickets, $5,767-80; privileges, $115; State appropriation, $1,-500. The bills for expenses have not yet all been audited, but the disbursements will probably reach $6,000, leaving a balance of $1,-500 to the credit of the Exhibition.—"*Alta California.*"

Characteristics of American Horticulture.—A pleasant, gossipy article, with the above title, was written some four months since by the editor of this journal for the *London Gardener's Magazine.* It has awakened the atten-

tion of some of our neighbor editors, who fear we may have assigned too mercenary and *profit-loving* a character to the nature of our American horticulture. As we never indulge in contra-criticism with our exchanges, we forbear any such remarks. The best comment upon the truthfulness of our statements is the evidence that they are noticed, and have "drawn fire." We have found, from observation and experience, that the rapid development of American horticultural interests, within ten or twenty years, has been due, *not to the love of horticulture, itself*, but to the desire for profit to be gained by extensive planting of fruit trees or vines.

Horticultural literature would be far more interesting and better patronized to-day, if we could blot out the great fruit fevers and manias that have so sadly disappointed our people. The grape fever, the strawberry fever, have come and gone, and strewn the field with mementoes of amateur horticulturists, who started with high hopes, eager for horticultural knowledge, but failed at last.

The blackberry fever, the pear fever, are still upon us, and soon they must pass, and then some new branch will arise, and so it will continue down through the distant future.

The nursery interests of America have been developed to their astonishing extent simply from the extensive planting of orchards and fruit grounds for *profit*.

Our fruit interests have absorbed our entire energies, and proved, at best, only partially satisfactory; and now, when crops so often fail and bring disappointment, the cultivator finds he has followed a treacherous beacon, and, alas! discovers little else that is beautiful and attractive in horticulture.

Our remedy for all this is, place less dependence upon *fruit*, and more on ornamental planting; think more of home, its beautiful trees and flowering plants, its garden, and the pleasures of the flower-bed, the culture of green-house and conservatory plants.

We never knew the joy of any owner of a flower-garden to fail, even if he lived to eighty years of age; neither have we ever known the admiration of the genuine *tree-lover* to grow less. Yet we find the *orchardist* continually disappointed, and where the heart is gloomy there is naturally little love.

Friends! if you would have horticulture "*grow in grace*" with the American people, year by year, encourage more freely the development of a love for the embellishment of home grounds, flowers, and home gardening. The more we learn of *fruit culture*, as an occupation, the less we esteem it in comparison with the still higher satisfaction that comes from a love of rural ornament, and the tasteful grounds and beautiful homes an elevated horticulture will be sure to give us. We would not discourage the culture of fruits for profit, but we esteem the other departments of horticulture far more desirable, and able to satisfy the most worthy enthusiasm.—*New York Horticulturist.*

The Walking Leaves of Australia.—Almost everybody has heard of the wonderful walking leaves of Australia. For a long time after the discovery of that island, many people really believed that the leaves of a certain tree which flourished there could walk about the ground.

The story arose in this way: Some English sailors landed upon the coast one day; after roaming about until they were tired, they sat sat down under a tree to rest themselves. A puff of wind came along and blew off a shower of leaves, which, after turning over and over and over in the air, as leaves generally do, they finally rested upon the ground. As it was midsummer, and everything appeared quite green, the circumstances puzzled the sailors considerably. But their surprise was much greater, as you may well suppose, when, after a short time, they saw the leaves crawling along upon the ground toward the trunk of the tree.

They ran at once for their vessel, without stopping to examine the matter at all, and set sail away from the land where everything seemed to be bewitched. One of the men said that he expected every moment to see the trees set to and dance a jig.

Subsequent explorations of Australia have taught us that these walking leaves are insects. They live upon the trees. Their bodies are very thin and flat, their wings forming large leaf-like organs. When they are disturbed, their legs are folded away under their bodies, leaving the shape exactly like a leaf, with the stem and all complete. They are of a bright green color in the summer, but they gradually change in the fall, with the leaves, to the brown of frost-bitten vegetation.

When shaken from the tree, they lie for a few minutes upon the ground as though they were dead, but presently they begin to crawl along towards the tree, which they ascend again. They rarely use their wings, although they are pretty well supplied in this respect — *Horticulturist.*

THE FRUIT, WINE, SILK AND WOOL OF CALIFORNIA.

The following extract is from the opening Address of Charles F. Reed, President of the State Agricultural Society, which was delivered at the State Fair at Sacramento, Tuesday, September 13th, 1870:

Our State, as well as our people, is, in many respects, without a parallel. She sprang at one bound from infancy to maturity. Without permission of the General Government, with no enabling Act, or Territorial or other organizations known to our laws, publishing to the world a Constitution expressive of the sentiments and will of her people, she knocked at the door of Congress for admission among the sisterhood of States. After a short but desperate struggle, in which usage, precedents and sectionalism were arrayed against necessity and our determined will, we triumphed, and but twenty short years ago, the 9th of the present month, we date the commencement of our existence as a State. Well may California Pioneers who took part in the events of those times, delight to keep green the memory of that day! Well may they celebrate the anniversary of that day with bonfires and illuminations, with patriotic poems and orations for to them the 9th of September stands next in importance to the 4th of July. Well may they be proud to number among their members some of the first men and most distinguished officers in the nation, and well may they feel complimented when some of these officers travel over three thousand miles to join them in their celebration.

But we have remarked that a few short years ago agriculture was unknown in California. At the time of her admission as a State, no one was found so wild as to imagine that she had any other value than for her mines. To-day, how different her position as an industrial State! Our mines though still valuable, are among the least of our industrial resources, and agriculture is the great all-sustaining, all-enriching, and all-important industry. From the least, we have, in the short space of twenty years, grown to be one of the most important agricultural States of the nation. In the production of fruits, wines, wool and silk, we undoubtedly stand the first in the Union. Our fruit list already embraces almost every variety known to the world. The hardier kinds grow to perfection in all portions of the State, from the northern and more mountainous regions, to the warm tropical climes of the southern valleys. In those valleys, and in almost all the valleys of the State protected from the direct ocean winds and the sweep of the winds of the broad plains, all the tropical and semi-tropical varieties flourish, and come to a degree of perfection not excelled in any of the fruit-producing islands of the tropical oceans. The eagerness with which our neighbors of the Atlantic slope seek the California fruits shipped across the continent, shows the superiority of those fruits over those of their own growth. When we shall have greater facilities and more perfect arrangements for shipping those fruits, with cheaper freights, as we will have in a few years, here is an opening for a trade that is destined to bring back to California no small portion of the gold that in former days was shipped out of the Golden Gate in payment for these very articles imported.

In this connection allow me to remark, that there is no longer any excuse for permitting fruits of any kind to go to waste for want of a profitable market. If they cannot be marketed green, let them be dried, and there is a demand in the Eastern States for all that can thus be preserved at highly remunerative prices. The variableness of our climate in different localities, if we choose to avail ourselves of the advantages thus offered by nature, will enable us to enjoy the luxury of green fruits the year around. Thus the same varieties of apples that ripen in the early Fall, in the valleys, when grown at an elevation of fifteen hundred feet up the Sierra Nevadas, do not

ripen until midwinter, and if grown at six hundred to one thousand feet greater altitude, will keep well until our markets are bountifully supplied with the early varieties of the following Spring. This is no wild statement founded upon mere theory or conjecture, but its truth has been thoroughly demonstrated by actual fact.

It is also ascertained that the fruit produced at a high altitude on the mountains is much finer grained and better flavored than that grown in the valleys, and if possible, the orchards are more prolific. These facts must prove of great value to California as a fruit-growing State, and those orchardists who first take advantage of them in a practical way will be doubly rewarded for their enterprise.

Though our Fair comes at a time when all the earlier varieties of fruit are gone, and though the display is but meagre compared to what our fruit-growers might and ought to have made it, yet we may without fear challenge any other country in the world to excel or equal it. A careful examination of the exhibition of fruit before us will prove the strict correctness of the statement we have made in regard to the climate and other advantages possessed by California as a fruit-growing country. Our wine product this year will probably exceed 20,000,000 gallons. Our vineyards are steadily growing in numbers and capacity, and with the age of the vine the wines are steadily improving in quality. Those varieties of table grapes that will bear transportation are selling for home consumption and shipment East at highly remunerative prices, and California, as a wine-growing country, is steadily making a good reputation for herself.

The greatest drawback to her complete success in this industry, is the want of uniformity and system in the selection and assortment of the grapes, and in the treatment of the wines. Thus, instead of producing a few choice and standard varieties of wines—such as would always be in demand at the highest rates the world over, we have been, and are still, pursuing the suicidal course of placing upon the markets wines of as many different shades of taste as there are different vineyards in the State.

Again, our wine dealers, in order to produce some degree of uniformity out of this great variety of wines, have taken up the practice of watering and "doctoring" them so as to give the mixture some of the characteristics of the better brands, for which they pass them off. This is all wrong, and a great detriment to the character of California generally, and especially so to the wines of the best makers. It is of the highest importance to our State and to the wine-makers themselves, that these evils should be corrected.

This object should be accomplished if capitalists and enterprising men would establish wine cellars in the different wine growing districts, and buying up the grapes from the producer, and assorting them in reference to their peculiar wine qualities, would submit them to such uniform treatment as science and good judgment might dictate. Capital could not find a better investment, nor enterprise a more certain reward than is here offered.

In the absence of such facilities the producers themselves would find it greatly to their advantage to associate together and manufacture all the wines of large districts at one common cellar and under one common management. We commend this subject to the serious consideration of our wine makers and to men of capital and enterprise.

This magnificent exhibition of fruits, grapes and wines from our mountain counties, the old mining districts, is worthy of more than a passing remark, and it warrants a more particular notice of some of the advantages of those districts.

Some of the best and most extensive and productive vineyards and orchards in the State are to be found in those localities. Without desiring to make any unpleasant distinctions, but only with a view of illustration, we would mention those of Nickerson of Placer, Mashall of Nevada, Bugbey of Sacramento, and Chalmers, Dickson, Brooks, Carpenter, Weatherwax and others, of El Dorado. The establishments of each of these gentlemen, comprising as they do extensive and highly cultivated and productive vineyards and orchards, together with commodious and well appointed wine cellars and other buildings, and all the paraphernalia of prosperous mountain farms, may well be pointed out as worthy of the pride of any State. They are really a credit to California, and each is to its enterprising proprietors a valuable fortune. Here and there, scattered through the foot-hills, are many other smaller but prosperous vineyards and orchards, but these are named as examples. And in this connection allow me to state a fact which is not generally realized even by those supposed to be well informed. There is, on the western slope of the Sierra Nevadas, a strip of country about twenty miles wide by over one hundred long, in which there may be selected hundreds of thousands of farms, equally favorable as to

location, soil, climate and all the other natural requisites as are the farms above named. All that is wanted to make these new locations as prolific, as beautiful and valuable as those referred to, is the same amount of money, skill and labor bestowed upon them that these men have bestowed upon their valuable homes. I will say further, that a very large portion of all this land has been surveyed, and can be bought of the Government and the Railroad Company, for from one dollar and a quarter to two dollars and a half per acre. Here are homes for the million, and those who, under such circumstances remain long without homesteads have no excuse.

Our wool clip last year was a little over 15,000,000 lbs. while this year it will be 20,000,000. Never before did our wool bear so good a reputation or bring so high a price in the markets as at present. By the cultivation of alfalfa or Chile clover upon our sheep ranges, the number of sheep may be greatly increased on the same area of ground, quality and quantity enhanced and improved. Silk culture is being entered into in all parts of the State, and bids fair at no distant day to become one of our most important industries. It is estimated that there are now in this State 2,500,000 mulberry trees, and the number will be greatly augmented during the next Winter. During the past year a silk manufacturing company, with abundant capital, has been organized in San Francisco, and buildings for the factory are nearly completed. This will stimulate the industry by furnishing constant home market for the product—the want of which has been a serious drawback to it heretofore.

THE INDUSTRIAL CONDITION OF THE STATE.

The Agricultural and Horticultural Fair which has just closed, although necessarily incomplete, posessed many points of interest to those who see in California an unlimited field for the culture of almost every known fruit, vegetable, grain, or fibre. It is totally unnecessary to allude to the innumerable specimens of splendid fruit there exhibited; to us, who look upon the vinicultural interests as among the most important in the State, the display of grapes and wines was specially interesting. Less than thirty years ago, Wilkes, when on his exploring expedition round the world, found the wine of California to be "miserable stuff, which would not be taken for the juice of the grape." Now our wines are becoming known and appreciated everywhere in the Eastern States; they have recently risen somewhat in price, and every day we hear of immense shipments. Not long ago, we recorded the sale of a lot of 100,000 gallons to one New York firm; last week, Bugbey, of the Natoma Vineyard, sent ten car-loads, 20,000 gallons of his best wines and brandies East by the Overland Railroad. We trust that the awards for the best wines exhibited at the late Fair, will be made with special care, and for the following reasons: Hitherto our wines have brought much too nearly the same prices; comparatively speaking, there has been little discrimination between the various qualities. How different in Europe! One kind may be worth a few sous or kreutzers per bottle; another will be sold at prices only within the means of the wealthiest. The writer was in Bordeaux when some specially fine *Lafitte* was sold *at auction* for 125 francs, ($25,) per bottle. The wine-grower has therefore, something worth trying after. It may be long ere any such differences exist here, but we venture to prophesy that the time is not far distant that while some of our wines will be worth less than they are now, others will be valued at triple and quadruple their present price. The specimens of the ramie plant exhibited at the Fair attracted much attention, as did also the tea from Schnell's plantation in El Dorado. The fact is now certainly demonstrated that our foothills will produce tea of superior quality, and should Schnell need it, we should be far from averse to an appropriation from the State in aid of his important experiments. He has now five million young tea plants, raised from the nuts, growing on his estate, besides a large number of older plants imported from Japan.

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The culture of hops is one among fifty miscellaneous sources of profit which will be largely pursued ere long. The business is a somewhat speculative one. Hops have varied in price in the last few years from twelve to sixty cents per pound, and are worth at this

moment in London—a market which consumes some 20,000 tons per annum—about thirty cents. The crop in the East has been a comparative failure this year, which will be good news for our growers. The complaint has been made, and to a certain extent allowed, that our hops have a peculiar bitter flavor, other than that natural to them. A great deal has not been done in this culture, but we have no doubt, that when it gets the attention which has been given, for example, to grapes and other products, our hops will compare with any. Among the interests hitherto little pursued, is the culture of the castor bean, and the expression of its valuable oil.—"*Alta*" *of September 5th.*

Our reasons for republishing this letter,—taken from the *Morning Call* of Oct. 13th, is to give it the widest possible circulation, and so endeavor to bring it before every cultivator of the soil.

We consider it one of the most important letters on an agricultural interest of our State, ever written, and every paper and journal would be acting a wise part in republishing it. EDITOR.

COTTON CULTURE.

ITS ADAPTABILITY TO CALIFORNIA.

DICKSON, (Ala.,) Oct. 3d, 1870.

EDITOR MORNING CALL:—Through the kindness of my friend, J. M. Strong, Esq., of Snelling, Merced County, I have received a late issue of your paper, containing an article on "Cotton Raising," in which there are some allusions to the contents of a private letter addressed to Colonel Strong by me, but not designed for publication. When apprised by Col. Strong of the publication of the letter, I addressed a communication to the *Scientific Press*, published in your city, discussing the question of the adaptability of your soil and climate to cotton production, designed to supply an omission of that journal in presenting to the public the claims of California as a home for emigrants. I trust that article, imperfect as it is in many respects, will be published. I feel much interest in this matter, and have studied carefully all the details furnished by my friend, which bear upon past efforts to produce the staple. Since writing the article referred to for the *Press*, I have received the Report of the transactions of the State Agricultural Society, embracing the results of efforts made in different localities to produce cotton. I have also received a statement containing the bounties offered by the State for the production of given quantities.

I venture to offer for the benefit of those interested in this matter a few practical observations.

1. You will observe that no effort has been made, excepting that of Col. Strong, to grow cotton in the San Joaquin and Merced valleys. Hence all that vast region is to be added to that portion of California referred to in the Report of the State Agricultural Society. The two are as combined equal that of the entire State of Mississippi, which produced in 1860, 1,202,507 bales of cotton, and in addition a food crop amply sufficient for the sustenance of her whole agricultural population. Col. Strong's several experiments in this region, would indicate one bale of 500 lbs. weight, as an average yield per, acre while the average yield of Mississippi does not reach one bale of 400 lbs. weight, to *three acres.*

2. No effort to produce cotton in your State will be attended with success, unless under the direction of a farmer possessed of practical experience in cotton culture. Every variety of soil requires specific treatment, and what that treatment must be is determined by experience. The successful management of the crop in a given locality, will furnish the mode of treatment for that locality. The failure to produce cotton in your State, hitherto, is due, beyond doubt, to want of practical experience in the management of the crop. For like reasons, though in other respects better farmers than we, every Northern man who attempted to grow cotton in the South since the war, returned home bankrupt.

3. If it is questioned whether cotton can be successfully produced, under the conditions specified, in California; let those who feel interested in the matter visit Col. Strong at Snelling, see the two crops produced under his direction, and be fully satisfied. They will see crops that will yield at the rate of *one and a half bales per acre*—cultivated at an expense so small that I dare not hazard my veracity by stating it. Col. Strong is a thoroughly practical California farmer. He came to the South at the close of the disastrous year of 1867, to familiarize himself with cotton culture. For two years he directed the cultivation of an Arkansas plantation owned by me, near Memphis. His second crop was 125 bales of 500 pounds

each, on two hundred acres of land—a yield largely in excess of any previous yield on the same land—as also of the production of neighboring plantations. It was due to the introduction of improved implements and a more thorough system of culture than had been previously adopted. Its continuation depended upon the ability of the farmer to hire labor for wages, which could not be done. Our labor system is that of "shares," the laborers directing cultivation—the most pernicious of systems—effectually barring all progress. The advantages offered by his own State induced Col. Smith to return to California much to my regret.

4. If it is doubted whether the production of cotton in California will prove remunerative—test it by the following figures.

HOW COTTON CULTURE WILL PAY.

Assuming as an average yield, one half of the amount indicated by the experiments of Col. Strong, ten strong hands will produce 160,000 lbs. seed cotton, or 100 bales of 500 lbs. each lint, worth, at 20 cents per pound, $10,000.

The cultivation of a cotton crop is here our only preparation for sowing grain; hence, the same labor required to *produce* this cotton will put in 200 acres of wheat, say, yielding 20 bushels per acre, or 4,000 bushels, worth, at 50 cents per bushel, $2,000.

Volunteered the third year, yielding ten bushels per acre, say 2,000 bushels, worth 50 cents per bushel, $1,000.

Thus the labor of ten hands, one year, produces crops, not including the expense of harvesting, valued at $13,000.

You will perceive the estimate of cotton yield is *one-half* that made by Col. Strong. So also of the wheat crop, sowed with preparation. His statement is, that with thorough preparation, your wheat lands will yield from thirty to forty bushels per acre. My estimate of the volunteer crop is the same as that of Col. Strong, because it is someting wholly unknown to me, and I am not prepared to alter it. The expense of culture each farmer can make better than I, it varying with the locality. The basis of the estimate would be: wages, cost of harvesting cotton ($1 per 100 pounds), rent of land, interest on capital invested in team, tools, etc., feed of hands, feed of team, wear and use of team, and damage.

If your State, or individuals, will furnish the capital to make a crop of 100 bales, I will forward the requisite quantity of Dickson seed to Col. Smith to complete the planting.

AN ECONOMIC VIEW.

The importance to your State to the development of this grand industry cannot be overestimated. Certainly your people will not allow the small sum necessary for its successful inauguration to bar the way. The systems of labor and culture at the South, if adhered to, will render the condition of the planter one of periodic ruin. Nearly the whole food supply of our population, agriculturists included, is annually drawn from the Western States. We annually export our very best *soil* to these States in the form of cotton, to pay for the food which we should produce at home. Thus we are always at the *end* of our resources, and when crises like those of 1867 or 1870 arrive our crops are forced upon a fluctuating or declining market, to meet the debts we have contracted to produce them. We are so situated that you can produce grasses and grains—food of every description much cheaper than you could possibly buy it. Hence, the obviously proper course would be to put all the *surplus* products of the farm in the form of grain and meat, into cotton, and to your distant markets transport the less bulky article. The average per hand cultivated in cotton and corn before the war, was represented by ten of the former and five of the latter. The average area in cultivation per hand, in 1870, cotton and corn inclusive, will not exceed seven and a half. It costs, in the Mississippi River bottom, 12½ cents per pound to deliver cotton in Memphis or other markets where the transportation does not exceed one dollar per bale. I mean to say, that every pound produced and sent to market, costs 12½ cents delivered, under the conditions specified. On the uplands, where the yield does not exceed a bale to three or four acres, it costs 15 cents per pound. To-day, the cotton it costs 12½ to 15 cents per pound to produce, is worth from 9 to 14⅛ cents per pound in the Memphis market. It *must* be sold to pay the cost of producing it, and thus it is demonstrated that the condition of the planter here, is one of periodic ruin. All the profit to result from the rapid increase of price consequent upon the cessation of hostilities is lost to him, because of his failure to produce his own food, retaining his cotton as *profit*. Production at the South reaches its culminating point in 1870. The two years of 1867 and 1870 mark the periodic ruin of the Southern planter. From this date forward there will be steady decrease in quantity and increase in price, until the planting community will again be tempted to over-production at the expense

of food, and a crisis will as certainly bring ruin.

CHINESE LABOR.

A single objection is presented to the infallibility of this view, in the prospect of an unrestricted importation of Chinese laborers, at such a low rate of wages as to reduce the cost of production to such a limit as will revive the quantity. How little consideration is due to this objection, will be seen in the fact that it costs $130 in gold each, to import these laborers at an expense in wages of $10 per month. Now, if ever, is the season to inaugurate the culture of cotton in your State. Everything that enters into production is cheaper there than here. Whatever is expended in production is expended *at home*, and thus builds up the wealth of the State. Every pound produced will be manufactured profitably at home. The two interests will grow up side by side, keeping pace with each other. The production and manufacture of cotton is a necessity to your control of the trade of that vast region which lies west of the Missouri River, and where San Francisco must fight a battle of prices with her Eastern competitors. I apologize for the length of this communication, but much yet remains to be said. Call my friend, Col. Strong, before your Chamber of Commerce, and hear his views. He has long and earnestly devoted himself to the investigation of the subject, and he deserves the encouragemeut of his people. I trust you will pardon me, in view of the necessity, for calling attention to his labors. We can all attest the truth that a prophet is not without honor, save in his own country! I am, Sir,

Very respectfully, your obedient servant.

WM. DICKSON.

The following article must commend itself to all who are interested in "Arboriculture," as well as to the people at large.

During the past summer, there has been great destruction done to our forests trees, by fire. This destruction is irreparable; but there ought to be some means adopted, to remedy the evil, or at least to lessen it as much as possible in the future. The state has already suffered severely in the destruction, (by fire, and the ever busy woodman's axe,) of our redwood forests, one of the most useful and valuable of our trees.—(EDITOR.)

HOW OUR FORESTS ARE GOING.

We find in the St. Louis *Republican* a lengthy and interesting contribution showing the rapid consumption of the pine forests in our Northern States. The Maine forests have already been so thoroughly stripped that not a tree of the old growth is left. Twelve years ago, New York exported immense quantities of lumber, but her forests are now totally exhausted, and she now relies for her own supply upon importations from the West, and from Canada. In the year 1869 the amount of lumber cut in the three great lumber-producing States of the Northwest was 2,029,372,255 feet from Michigan; 317,400,000 feet from Minnesota, and 964,600,600 from Wisconsin. To obtain this quantity, 883,032 acres, or 1,380 square miles of pine forests were stripped of trees. It is estimated that four millions of acres still remain unstripped in Michigan, which will yield fifteen thousand millions of feet of lumber. About three millions of acres remain in Wisconsin, and 8,630,000 acres in Minnesota, which are estimated to yield 32,362,500,000 in feet of lumber—a quantity too immense to intelligently estimate, but whose consumption is merely a question of time, for no more than twenty years, at most, will be required to cut and send to market all the trees now standing. The demand for pine lumber is fast increasing, and spreading over a wider area of territory. The problem for solution, and one which cannot receive attention too early, is, what means can be devised to replace this enormous consumption? This question has been carefully considered in Europe for a century or more and it forces itself upon our notice in several aspects. As the writer in the *Republican* remarks, the destruction of our forests, and the denudation of our prairies of their primitive vegetation, have made fearful inroads upon our climate. The rains have less frequency, and when they do come are more deluging than formerly. We are more frequently suffering from the opposite extremes of excessive drouths and destructive inundations. Our springs, brooks and rivers are drying up. Our old folks all tell us that brooks now more than half the time dry, in their childhood afforded constant water-power to mills; and as a proof of what they say, point the mill site long since abandoned. And this is because our forests have long since succumbed, or are rapidly disappearing before the axe of the woodman and the fires of the incendiary, and our flocks have denuded the prairies of their primitive grasses. The writer suggests first, as a remedy for the anticipated

scarcity of timber, that more economy should be exercised in building houses, in which much extravagance and waste of material are now noticeable. And whenever possible, other timber than pine should be employed on buildings when it will answer as well as pine, and the State authorities should encourage planting and rearing such trees on the great plains of the West as are best adapted to flourish there. We on the Pacific Coast are only remotely interested in the rapid consumption of the pine forests of the East, but we can nevertheless, observe with profit the experience of the older States as regards the unnecessary destruction of timber."—*Daily Morning Call.*

THE CASHMERE GOAT IN AMERICA.

The introduction of the Cashmere goat into the United States during the year 1849, by Dr. Davis, of South Carolina, must be considered an important step in the inauguration of a branch of industry destined at no distant day to add materially to the wealth and prosperity of that country. The original importation consisted of seven females and two males. These were retained in the more Southern States of the Union, and notwithstanding the change to a warmer climate (having been brought out from Turkey in Asia), the experience of the ten succeeding years proved that the American offspring was in many respects a finer goat, and yielded a heavier fleece. At the commencement of the civil war in America these animals had been introduced in most of the Southern States, but particularly in the States of Georgia, Tennessee and Texas, with the most satisfactory results. In the year 1858, a single company in Tennessee sold $30,000 worth of their grade animals alone in the States of Tennessee and Kentucky. These were all decendants from the flock imported by Mr. Davis, and ranged from half to pure blood. The experiments made in the other States in the meantime were equally successful, especially in Texas, where both soil and climate seemed peculiarly adapted to the raising of this valuable animal.

The average weight of a full grown Cashmere buck is about one hundred and fifty pounds, while that of a female is about one hundred pounds. The animal fleece of the buck will weigh about six pounds and that of the doe four pounds. The hair of the finer grade animals is a beautiful, soft and silky article, from ten to twelve inches in length, beneath which is found two or three ounces of short and very fine down from which the celebrated Cashmere shawls are manufactured. This down is of course much more valuable than the long hair, and when separated from the latter commands almost fabulous prices. The price paid for the fleece will depend entirely upon the grade of the animal producing it; but it may be safely stated that four dollars per pound for half-breed, and eight dollars per pound for pure breed fleeces is a very moderate estimate in the American market, while as high as fifty dollars per pound has been offered for American fleeces in the French market.

As the chief value of the Cashmere goat is its fleece, it is natural enough that those wishing to engage in the business should desire to commence with none but full-bloods, in order to realize a more immediate return; but experience has already shown that it is far wiser to cross a full-blood, or even a half-blood buck with a doe of the common goat kind, costing say $3 per head, than to import males and females from Asia at a cost of not less than $500 specie—risking all the casualties incident to a sea voyage and change of climate. By breeding upon a cross of the half-breed buck with a common doe, you acquire a finer grade each successive year, which by the fourth cross will have obtained an animal little, if any, inferior to the full-blooded ones, and at the mere tithe of the cost, making a due allowance for the trouble and time expended in accomplishing the object.

Taking into consideration the established fact that the Cashmere goat by the process already referred to is readily acclimated, and can be husbanded as easily and as successfully as blooded or grade sheep, and its fleece, weighing fully as much, can command *thirty dollars* per pound in the market, while wool will bring about as many *cents*, it would appear that argument on the subject is unnecessary. To enterprising capitalists this business promises a more certain return than any we know of, and as long as fashion rules the land they may be sure of a liberal market.

Dried Sweet Corn.—The canning of corn cannot be successfully done in families, but dried corn is nearly as good if properly done, and can be had by all. The excellence of this depends quite as much upon the time of picking, as upon the method of curing. If too old, no process of drying will make it tender and savory. The ears should be plucked in the milk, their best condition for eating when fresh. With a sharp knife split the rows of kernels, and cut from the cob. Spread in iron pans and place in the oven to drive off a part of the moisture. Stir well to keep from burning, and when thoroughly heated, spread upon the sheets in the sun to dry. It must be thoroughly dry when put away, and must be kept in a dry place. Another method is to boil the fresh picked corn five minutes, then split the kernels and cut from the cob, and spread in the sun to dry. It is good cooked as a vegetable in winter, and still better made with Lima beans, or even common beans, into succotash. "Subscriber," Bloomfield, Iowa, boils the corn, cuts the grain one-half off, and scrapes off that which remains attached to the cob. The drying is done in a shallow box, covered with a hot-bed sash, set sloping to catch the sun.

Meeting of Fruit Growers.—The growers of small fruit of Santa Clara Valley held a meeting in San José, the other day, at which Judge Archer presided. He stated the objects of the meeting to be, to consider how remunerative prices could be obtained for small fruits. The following resolution was adopted:

Resolved, That it is the sense of this meeting that the fruit growers of this valley should organize themselves into a Fruit Growers' Association.

On motion, the following gentlemen were appointed to draft a Constitution and By-Laws: Dr. Hudson, Wm. Boots, J. Q. A. Ballou, Judge Thomas, Isaac Bird, and Judge Archer.

Another meeting to consider the same subject is to be held on the 19th instant.—*Call, Nov. 8th.*

CONSTITUTION

OF THE

BAY DISTRICT HORTICULTURAL SOCIETY,

OF CALIFORNIA.

ARTICLE I.

NAME.

This Society shall be called the Bay District Horticultural Society, of California.

ARTICLE II.

LOCATION.

Its place of business shall be the City of San Francisco.

ARTICLE III.

OBJECT.

It shall be object of this Society to collect and distribute information in regard to Horticulture, hold exhibitions and award premiums for the best productions.

ARTICLE IV.

MEMBERS.

The Society shall consist of

1st. Regular members, who shall be entitled to all the privileges of the Society and

2nd. Honorary members, who shall have the same privileges as the Regular members, but no vote in the transaction of business of the Society.

ARTICLE V.

OFFICERS.

The Officers of the Society shall be

1. President.
2. Vice-President.
3. Secretary.
4. Treasurer.
5. Board of three Trustees.

The President shall preside at all meetings of the Society, preserve order and in case of an equal division upon any question, shall give the casting vote.

The Vice-President shall preside and perform the duties of the President in the absence or disqualification of that office.

The Secretary shall keep on record the proceedings of the Society, collect all dues and pay them over to the Treasurer, taking his receipt for the same; and perform such other duties as may be required of his office.

The Treausurer shall take charge of all funds belonging to the Society, and disburse the same by-order of the Society. He shall give bonds if required and make a financial report at the regular meetings.

The duties of the Trustees shall be the general management of the property of the Society.

ARTICLE VI.

MEETINGS.

The regular meetings of this Society shall be held on the last Saturday of each month, for the transaction of business. Special meetings may be called by the President at the request of five members.

ARTICLE VII.

AMENDMENTS.

This constitution shall not be amended, unless by a vote of two-thirds of the Regular members present, and notice of such amendment shall be given two months previously, and a written notice of the same shall be served upon each member of the Society by the Secretary.

BY-LAWS.

SECTION I.

MEMBERSHIP.

Any person, who wishes to become a regular member of this Society will be elected by ballot, after being proposed as candidate at a former regular meeting. Three black balls will exclude the candidate. No person shall be deemed a member and be entitled to act as such, until he shall have paid the sum of five dollars into the funds of the Society, and signed the Constitution and By-Laws.

Honorary members may be elected by a majority of those present at a regular meeting. No contributions shall be required of them.

The Secretary shall notify the candidates of their election in writing.

SECTION II.

ELECTION OF OFFICERS.

The annual election of Officers shall be held on the last Saturday of November, and the elected Officers shall enter on their duties on the last Saturday of December, following.

The candidates for offices shall be nominated on the last Saturday of October previous, and no person shall be elected to office, who has not been so nominated.

The election shall be by tickets of a majority of the members present.

In case of any vacancy, the same shall be filled by a new election to be held at any regular meeting.

SECTION III.

QUORUM.

At any regular meeting five members shall constitute a quorum for the transaction of business.

SECTION IV.

MONTHLY DUES.

Each regular member of this Society, shall pay into the funds of the Society a monthly due of fifty cents, to be collected by the Secretary.

SECTION V.

ORDER OF BUSINESS.

1. Call of the Roll of Officers and Committees.
2. Reading of the Minutes of the previous Meeting.
3. Report of Officers and Committees.
4. Proposition of New Candidates.
5. Election of Members.
6. Unfinished Business.
7. Appointment of Committees.
8. New Business, and subjects pertaining to Horticulture.

SECTION VI.

PENALTIES.

Any regular member who for the space of six months shall have neglected to pay his monthly dues, shall be notified by the Secretary in writing, and unless payment of such dues shall be made by him at the next regular meeting, said member shall be considered expelled from the Society.

If any member of the Society shall disobey its laws, or do anything to dishonor the Society, he may be expelled by the vote of two-thirds of the members present. But no member shall be so expelled, unless a written notice of the motion shall have been served upon him twenty days before it is acted upon.

SECTION VII.

PROPERTY OF THE SOCIETY.

No member shall remove any of the property belonging to this Society out of their rooms, except by special permission from the members present at a regular meeting.

Donations to the Society shall be entered in a book kept for that purpose by the Secretary.

SECTION VIII.

EXHIBITIONS.

The Society may hold exhibitions of fruits, flowers, plants, vegetables, and seeds, at such times and places as it may hereafter determine.

Members and their families only shall have free admission to all exhibitions of the Society.

SECTION IX.

NEGLECT OF DUTIES.

Officers of the Society neglecting their duties as such without sufficient cause, may be suspended or removed by three-fourth of the members present at a regular meeting.

SECTION X.

LIFE MEMBERS.

Any member can become a Life-member by the payment of twenty-five dollars into the funds of the Society, and shall be free from assessments thereafter.

SECTION XI.

READING ROOM.

The Society may establish a reading room for the benefit of its members, and may subscribe for and purchase such papers and books, as a Committee appointed for that purpose may find judicious.

SECTION XII.

DISBURSEMENTS.

All bills against the Society, shall be considered at the regular meetings, and after being passed upon by a vote of the members present, signed by the President, and countersigned by the Secretary, the Treasurer shall pay the same out of the funds of the Society.

SECTION XIII.

DISCUSSION.

No member shall speak more than three times on one subject, except by special permission of the majority of the members present.

SECTION XIV.

AMENDMENT.

These By-Laws shall not be amended unless by a vote of two-thirds of the members present at a regular meeting, and notice of such amendment shall be given one month previous to its being acted upon.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

VOL. 1. DECEMBER, 1870. No. 2.

THE ROSE—(ROSA).

There is probably no plant so well-known, and so extensively cultivated as the Rose; everybody knows it, everbody admires it, everybody loves it. Very often we find a plant of considerable merit discarded, merely because everybody cultivates it, and some other is preferred because it is new and rare, although possibly in many respects inferior—a whim of fashion.

This fickleness does not affect the Queen of Flowers, the Rose. She, in her majesty, rises supreme above all those freaks of fashion which disturb the reign of the less fortunate beauties of her court. However tasteful and costly, however elaborate and *recherche* the detail of the most artistically decorated and extensive villa grounds, the Rose constitutes the most prominent feature, and the chief floral embellishment. Roses in groups, roses in masses, roses in the elegant form of little trees, roses over trellis-work and frames, roses in hedges, roses in pots, roses as creepers over the lawn and the parterre, peeping in at the windows, and from under the eaves and balconies, clambering over the roofs, massing around the hall-doors, supporting the verandas, standing sentinel on the lawn, caressing and embellishing the statuary, toying with the humbler occupants of the parterre, screening less tasteful objects, softening and mellowing sterner foliage, festooning and draping inelegant ruggednesses, blushing in the ardent sunlight, giving warmth and life and light to to the shade, smiling, sparkling, gratifying everywhere, gracing the hall, the boudoir and the drawing-room, yet modestly and gracefully asserting their dignity in the conservatory; everywhere claiming their places and filling them well. The freshness of their verdure, the beauty of their buds, the fine form of their flowers, the delicacy, variety, purity of tint in their colors, and their exquisite fragrance, all these characteristics entitle the roses to the first position among our floral favorites.

The Rose is indigenous in Europe, Asia, Africa, and America; the only country, where to the best of our knowledge, it is not a native, is Australia. There are more than 80 varieties of wild roses known, of which the majority are found in Asia.

Every year adds new varieties to the list of roses under cultivation, and within the last few years so numerous have been these acquisitions, that it is almost impossible to give even approximately the number of distinct and meritorious varieties—there may be about four hundred.

Roses, as now cultivated, are classified into certain divisions, of which however the gardeners differ very much as to the number and characteristics. We should like to see this matter of classification arranged, so as to be brief, yet intelligible to all. We will adopt the following as one to which very many nurserymen adhere:—Tea Roses, Bourbon Roses,

Noisette Roses, Hybrid Perpetual Roses, China or Bengal Roses, Moss Roses, Climbing Roses, and miscellaneous roses.

Under this classification we shall include all the varieties which have been successfully cultivated in California; some we shall omit because they only do well in certain localities and under peculiar circumstances. It will assist us very materially, and be very acceptable, if gardeners and amateurs will inform us if we have omitted any varieties which under their observation have been cultivated with success, at the same time mentioning merits, and mode of treatment.

CLASS I.

Tea Roses (Tea-scented Roses) are so called for their exquisite perfume; they bloom freely and are never without flowers, except during such cold weather as we never experience in San Francisco. The Tea Rose is not a robust or strong grower, the flowers are, with very few exceptions of medium size. The best varieties for cultivation in California, are the White Daily, color pure white; Safrano, most splendid bud, apricot changing to buff; Eliza Sauvage, continual bloomer, yellow to white; Devoniensis cream, yellow, buff centre; La Sylphide, flesh and pink, beautiful; Gloire de Dijon, yellow shaded with salmon. Some of the above varieties should be grown in every garden.

CLASS II.

Bourbon Roses. In this class we have a few varieties of great merit, nearly all of them are perpetual bloomers, and some of them produce flowers of very beautiful forms. The best are:—Hermosa, bright pink in color, beautiful cup shaped flower, always in bloom; Souvenir de la Malmaison, very large rose, very double, bright flesh color; Gloire de Rosamene, brilliant velvet, semi-double, the bud is very beautiful, it is always in bloom, and during the cold weather here it blossoms very profusely; Barron Gonella, cherry-red, a good rose of very delicate color.

CLASS III.

Noisette Roses. All of these have the habit of climbing roses, still they form a class by themselves. With proper pruning these roses can be cultivated as bushes or trees; but we prefer to see them trained as vines. The white, yellow, and salmon colors are characteristic of them, their flowers are large and full, and nearly all of them are very fragrant. Their principal flowering season in California is during the early summer and late in the autumn, although being monthly roses, they may produce flowers at any season of the year. We will mention the following varieties as the most prominent of their class:—La Marque, white, yellow centre, one of the very best, and well known among gardeners and amateurs; Solfaterre, (Solfatare) sulphur yellow, large and magnificent form, similar in habit to La Marque; Cloth of Gold, (Cromatella) sulphur yellow, large and magnificent in form. This rose has been very extensively cultivated in California, and the plants have always been in demand at good prices; but around the city of San Francisco it has not answered the expectations formed of it; although it grows well, very few flowers are obtained—in fact we know some plants which have been cultivated for more than three years, and have not yet produced a single flower. On the Oakland side, and in some other parts of the country it succeeds much better, and among the foot-hills of the Sierra Nevadas it flowers beautifully. Ophirie, (Gold of Ophir), orange-yellow, with buff and rosy tint, a fine rose which will do well in a warm situation; Marshal Niel, (Neil), is a seedling from the Cromatella, and a new acquisition, its color is of a beautiful yellow. This is one of the finest roses in cultivation, and meets with fair success in California. We are inclined to believe that the Marshal Niel will give more satisfaction when cultivated in pots or boxes, where its tendency to luxurious development of stock and branches, will be restrained by limited nourishment.

This class of roses contains some of the most valuable varieties, but they do not seem to flourish well in the atmosphere and climate of San Francisco. They do not flower as freely with us as is desirable; but we would advise giving them still further trial. We

would recommend for all of them the most sunny and protected situations in the garden, with strong soil and plenty of manure. We would further recommend, that these Noisette Roses be grown on budded stocks, and not on their own roots. We have seen them flower much better when so treated, for which fact we cannot account, and shall be most happy to hear it explained, if any of our friends have also noticed it.

CLASS IV.

Hybrid Perpetual Roses. The Hybrids are by far the most popular roses, they do best in a deep rich soil, and absorb a large amount of nourishment, for which reason they should have a good and frequent supply of manure. Their flowers are developed chiefly on new shoots, for which reason it is desirable to keep them in a constantly growing condition. This is easily effected here on account of our favorable climate; the old wood should be removed from time to time, and the young shoots should be cut back as soon as they develop their flowers. The best varieties of this class are:—Geant de Battailes (Giant of Battles), scarlet, crimson color, continuous bloomer and perfect flowers. Although an old variety, the Geant de Battailes will always be popular, and one of the leading varieties. Next comes Pauline Lansezeur, deep rich velvet, makes a beautiful bud which is very much used in bouquets. When in full bloom it is not very double, but for its buds and half opened flowers it is one of the most desirable varieties. Cardinal Patrizii, dark velvet crimson, does not flower very freely with us, but flourishes much better in Sacramento and other parts of the State; the soil for this variety should be very deep and rich, its peculiar dark color entitles it to a place in every collection of roses. General Cavaignac, bright cherry color, is a beautiful rose, and promises to do well here. Jules Margottin, bright cherry, is also a very fine rose, and should be cultivated more extensively. La Reine, a large and well-known rose of a rosy-pink color, very fragrant, a constant bloomer, and robust grower, very desirable. Lord Raglan, deep velvet crimson, one of the very best, good bloomer, no collection should be without it. Madame Laffay, a well-known variety of good habit, blooms continuously; flowers, rosy crimson. M'me Rivers, light flesh-color; a beautiful rose of fine form. Marguerite Le Cureux, scarlet, crimson, white striped, one of the best variegated roses, and therefore extremely valuable for a collection. All of the above named varieties deserve places in the flower garden; all do well with ordinary care.

CLASS V.

Chiaa or Bengal Roses. This class is less numerous, they are of a dwarf habit, and their flowers are of smaller size. The best varieties are Agrippina, of a rich velvet crimson color, one of the best. Archduke Charles, rose changing to crimson, flowers larger than of the other varieties, does not open well here. Louis Phillippe, crimson, a fine and profuse bloomer, one of the best—no collection should be without it.

CLASS VI.

Moss Roses. There is nothing in the shape of floral production more exquisitely beautiful, than a well-formed Moss Rose bud, but we are compelled to admit with regret, that we have seen but very few good buds here; and to confess that this beautiful class of roses do not thrive well in San Francisco. In warmer localities, as Sacramento and Marysville, they do much better, but even there the production of flowers is far from satisfactory. A different mode of treatment may be productive of more pleasing results in the warmer portions of our State, but we cannot recommend the extensive cultivation of this class of roses near the Bay of San Francisco. There are Monthly Perpetual Moss Roses, but with us they seem to lose this characteristic. Some of the best and most popular varieties are the Luxembourg, dark crimson; White Cluster; Centifolia, pink—one of the best; Salet, bright rose, beautiful. We must plead for the continued cultivation of this class of roses to a limited extent, subjecting them to different modes of treatment. They are too beautiful to be discarded without some effort to retain them.

CLASS VII.

Climbing Roses. Nearly all of this class bloom during the early part of summer, and while in full flower they certainly present a most striking appearance; why they are not more generally cultivated is inexplicable to us. We foster many climbing plants and flowering shrubs which only bloom once during the year. Why should we not make room for some of our valuable climbing roses? The leading varieties are the Baltimore Belle, blush color, flowers about the size of a half-dollar, grouped in large clusters—a very desirable rose. Prairie Queen, rosy lilac, flowers large and cup-shaped, growing in clusters. It is a fast grower and continues in bloom for a long time—it is one of the best. Multiflora, blush color, very good.

CLASS VIII.

Miscellaneous Roses. We shall include in this class many roses of peculiar nature and habit, some of them may be considered as belonging to one or other of the former classes, but certain characteristics require them to be placed in a special class. The Persian Yellow Rose, is one of them, it is of a golden yellow color, not very double, and flowers during the early part of summer; Sweet Briar, single flower, it is cultivated for its fragrant leaves; Green Rose, that might be considered as belonging to class 5, China Roses, but we consider it more as a curiosity than anything else. Its flowers are as green as the leaves themselves, it is a native of Japan. Banksia, of which there are several varieties, they are sometimes called the thornless rose, there being no thorns growing on their stocks, the flowers are small and grow in clusters, the foliage is beautiful, and of an evergreen character. Mycrophylla Alba, is a fine white, sweet-scented rose, it does well in a warm situation, but it is very little cultivated in this country.

This concludes our list of those roses which have been successfully cultivated in California. Our nurserymen have from time to time imported many other varieties, some of which were highly esteemed both in the Eastern States, and in Europe, but their experience did not justify their general introduction into our gardens, some of them made a vigorous growth of wood, but failed to develop any flowers, while others did not live long enough to be recognized as additions to our collections and catalogues here.

To grow the rose successfully, and to obtain good flowers throughout the whole year, requires more than soil and water. In light sandy soil with the addition of manure and water, it will make a great deal of wood, but will not continue to flower throughout the year, in fact it will lose the characteristic of a monthly rose; to retain this desirable quality, it is necessary to supply it with strong loam and plenty of rich manure, and to cut back the wood frequently, particularly the side branches, which may be cut back to three or four eyes. We should recommend pruning roses in the same manner as that operation is performed on the vine *i. e.* during the early spring, and repeat four or five times during the year. By this treatment new wood will be forced out constantly, and with it, fresh flowers. One-half of the rose bushes here, do not receive a proper pruning for years; when these fail to flower freely, it may be justly referred to this neglect. The rose also very rapidly exhausts the soil, and unless a fresh supply of nourishment is provided, the reputation of this most popular flowering shrub is at stake.

The successful cultivation of roses in pots, is attended with many difficulties. One great mistake is the selecting varieties for such treatment, which are not adapted for pot culture. It is an incorrect idea that every kind of rose will succeed when planted in a pot; although professional gardeners may succeed in bringing every variety of rose in full bloom into our market, we must remember that this is in a great measure effected by forcing the plants under glass, and their object is the quicker sale and the better price which such plants will obtain, than those cultivated entirely in the open air, although these latter are far preferable to the former. The roses best adapted to pot culture, are the Bourbon, Tea, and China or Bengal roses, particularly the two latter classes. We should advise purchasing

small young plants, and using strong rich soil. A small plant will do well in a five inch pot for six or eight months, then it requires to be changed into a six inch pot, in which it may remain for another six or eight months; in this manner it should be changed from time to time to larger pots as its growth requires. The surface of the soil should occasionally be covered with some rich manure which will renew its strength, as well as retain the moisture for a much longer time. It is true this mode of treatment involves some little labor, but we cannot expect to succeed in the cultivation of any flowers without devoting some extra time and trouble to their necessities, and it is but a small equivalent for all the embellishment with which they adorn our homes, for all the fragrance and delight they afford us.

Although a monthly bloomer, yet like most of the flowering shrubs, the rose developes more flowers in the spring than at any other season of the year, under ordinary treatment, and we recommend the pinching off, at least one-half of the buds while yet young; this will give the remaining ones more strength, and produce better flowers, while the plant suffering less exhaustion, will throw more vigorous buds in succession. To have them flower during the winter, it is necessary to keep them inside of the house, or in some well protected position outside. If kept in the house, they should have plenty of light, fresh air, and moisture; a dry and hot air is injurious.

In watering roses we must carefully avoid excess; superfluous moisture becomes stagnant, and renders the soil in the pot sour, as the gardener calls it. The water which is supplied to pot plants, must be consumed by the plant, evaporated, or carried off by drainage; evaporation takes place when the atmosphere contains less moisture than the soil, and is expedited by a warmer temperature, the drainage we obtain by laying a piece of broken pot over the opening in the bottom of the flower pot. Drainage and evaporation thus relieve us of the onus of discriminating how much water is necessary for the growth of the plant; but if we give more moisture than can be readily disposed of in these three different ways, the soil becomes sour, and the plant soon fails and perishes.

Monthly roses are the most neglected of all flowering plants, and yet when in bloom, they well repay us for our labor.

THE ERICA.

The Erica (Heath) is an evergreen shrub, varying in height from 2 to 4 feet, most of the species are indigenous at the Cape of Good Hope, and in Australia, but very few have their habitat either in Europe or America. The flowers according to variety, are of every conceivable shade, from pure white to the deepest red and purple—more than 300 varieties are cultivated in Europe, and more extensively in England than anywhere else. This handsome flowering shrub has not been cultivated to any extent in the United States; for this some few reasons may be adduced:—

First.—For many of the varieties the latitude of New York and Boston is too cold for outdoor culture, and under glass, the Erica does not thrive unless proper and expensive houses are built expressly for it.

Second.—It is a singular fact, nevertheless true, that the Erica family succeeds best when cultivated by itself; and in order to obtain good specimens, the plants require plenty of room. This mode of treatment the American nurserymen do not appear hitherto to have been willing to concede.

Third.—It must be remarked, that although the English gardeners succeed best in their cultivation, yet this to a great extent is attributable to the mild winters, and the moist atmosphere of that country; for they have not succeeded any better than others of the profession in the introduction of the Erica on the European Continent.

We believe that the Pacific coast offers facilities for the successful cultivation of a number of good varieties of the Erica, and our gardeners should make a strong effort to introduce this beautiful shrub into California to a

greater extent. Some of our nurserymen have given them a trial, but they have erred in cultivating them as greenhouse plants, and consequently have failed to meet with any encouraging results; but very few plants of only three or four varieties have been cultivated in the open air, but of these, some have flourished well. When we take into consideration that over three hundred varieties of the Erica exist, we feel certain that a large number of them could be cultivated here. The people of the Pacific coast have a mania for evergreen flowering shrubs, and we have no doubt but that this plant would grow largely in favor with the public if some of the leading varieties were properly introduced to them. It is true that some of the varieties require a particular soil and a certain climate, which we do not possess, but very many could be successfully cultivated in our own climate, and in soil which is easily procured. In the heart of large cities like San Francisco, we do not advise the cultivation of the Erica, as it does not like to be caged in by surrounding walls and a smoky atmosphere; but wherever it can enjoy a free circulation of pure air the Erica will do well; the best locality for it is near the Coast Range, where our heavy sea fogs supply that moisture so necessary to it.

A very good compost for most of the varieties of the Erica may be made of four-fifths of leaf-mould and strong stiff loam in equal parts, and one-fifth of sand, to this a small quantity of bone-ashes may be added; a number of varieties will thrive well in the ordinary beach-loam, so frequently found in this city, and indeed all over the country. It is inexpedient to use cold well water for irrigating, as it frequently contains lime and other mineral substances, and the watering with cold water during a hot day, very often results in the decay of the stems or trunks of the plants.

The Erica is propagated either by seed or cuttings; but as some of the varieties do not often produce seed, they are raised exclusively from cuttings. The seeds should not be sown very thickly, and it is better not to cover them with the soil, but to press them gently into the surface with a smooth piece of wood, it is advisable to keep the flower pot or box containing the seeds or cuttings covered with a pane of glass to prevent the surface drying too rapidly; and it is further necessary to keep the soil well drained, which can be effected by placing pieces of broken pots at the bottom of the pot or box when preparing for planting, and thus obviate a stagnant or sour condition of the soil. The cuttings should be of one or two inches in length, and should be taken off when the wood is sufficiently ripe. They should be stripped of their leaves to one-half of their length, and plunged to that depth in the soil. The pot or box should be placed close under the glass in the frame or greenhouse, and after remaining in a cool place for some days, a little bottom-heat may be advisable, although it is not indispensable, and may be omitted where such appliance is inconvenient. The propagation by cuttings should take place during the summer months after the flowering season is over, at which time the Erica is throwing out new and strong wood, well adapted for that purpose. The seeds should be sown as soon as convenient after being gathered. It is well to remove the glass cover from time to time as the circulation of a little fresh air is beneficial to the young plants.

The best mode of watering the seeds or cuttings, is by placing the pot in a saucer. One circumstance connected with the propagation of the Erica is somewhat peculiar, although we find it the habit of some other woody plants; the cuttings from sickly plants are preferable to those taken from strong and healthy plants. After the plants are well rooted, they be should hardened by exposing them to the open air, at first during the day only, afterwards during the night also, they will soon be strong enough to be potted and repotted or to be turned out into the open ground. If the young plants are cultivated in pots, it is desirable to shift them very often, so as to keep them constantly growing.

To cultivate Ericas as well-shaped specimens, it is necessary to pinch off the young shoots early, this will force the plant into branches and produce a more compact growth, which is very desirable in this class of evergreen shrubs.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION II.—LANDSCAPE GARDENING.

We will now request our readers to leave with us for a short time the thickly settled portions of the city, where the soil has the ill fortune to be cut up into slices of 25 x 100 feet, condemned to the drudgery of supporting the so-called improvements, lies secluded from the life-giving influences of warm sunlight, refreshing showers, and fresh pure air, within the narrow limits of dark damp cellarages and fœtid smelling basements, or encased in cobbles and coarse planking for traffic purposes, and accompany us to the suburbs and into the open country surrounding them, where although the landshark has left the imprint of his grasping heavy hand, nature yet reigns in all her pristine glory of valley, and hill, rock, stream, and lake, backed by her majesty of mountains; and where her graceful undulating lines of rolling surface, have not yet been graded or degraded with the tasteless straight lines of narrow-minded modern improvement men. Here, as we travel along feasting our eyes on the ever varying scene, we shall be attracted from time to time by the special beauties of certain localities, in whose adaptability to our views and purposes, we recognize appropriate spots for the settlement of homes, where by the exercise of experience in arrangement and construction, may be developed all that comfort, finish, and completeness which evince the cultivated taste of the owner, and where by the skillful adapting the peculiarities of surface, the addition of features, and the blending and harmonizing with the surrounding landscape, the art of Landscape Gardening may be manifested.

In selecting the site for a suburban residence we should be influenced by several important considerations; in the first place,—*Health*, and for this pure air and drainage are indispensable, the location should therefore, always be elevated; its *Aspect*—for this southerly or southeasterly are preferable; *Climate and Exposure*—it should be protected by superior elevations from strong winds; *Soil*—as it is almost impossible to make soil for an extensive tract of land, this is an important consideration in the selection, the best soil is loam, with an underlayer of clay; *Water*—the supply of which should be abundant; as without it in California, our labors cannot be successful, and finally its proximity by railroads, steamboat lines, or otherwise, to the place of business. If remote from the place of occupation, too much time is occupied in reaching it, and although the transit is healthful, yet it may often be fatiguing, and too many hours of home comfort are sacrificed. The purposes in withdrawing to a country residence are health and recreation, independence and seclusion, not exclusion.

Having decided on the locality for the future residence, it is necessary to determine the site of the house; an elevated spot is desirable, as well for health, the view, drainage, etc., as that the approach to it may be at an easy ascending grade, we of course do not wish to be understood, that the highest point should be selected, as in many cases this might not only be incovenient, and inappropriate, but in positive antagonism, with all the rules of landscape.

The laying out and planting the grounds must next be considered; and here we will remark that the work of the landscape gardener will be far easier where the grounds are extensive, than where comparatively limited. The owner of five acres of land seeks the same result as the proprietor of fifty or one hundred acres, so far as rural landscape is concerned; and it is far easier to elaborate all desirable features on a large extent of ground, than where we are compelled to crowd them together into a narrow space. In this latter case the landscape gardener, with all his skill and experience, cannot avoid producing the impression that too much has been attempted. And herein we differ from many others, we maintain that where a place is too limited to admit the introduction of all the features of a good landscape, one certain phase should be made predominant, and as expressive as possible. For instance, where nature has provided

an abundant growth of trees and shrubs, *picturesquness* is easily obtained: where new plantations have to be made, the *beautiful* may be made the important feature: where water can be had in abundance, that may be made the most prominent phase, etc.

In the practice of Landscape Gardening, certain styles have prevailed; the oldest has been designated the Geometrical or Symmetrical style, and is characterized by the adopting the lines and style of the grounds or garden, so as to harmonize with those of the house. Another has been called the Modern, and sometimes the irregular or English style; but with us in California, we adopt no style at all, but are governed entirely by local circumstances. We have a decided aversion to formality and excess of symmetry in everything pertaining to Landscape Gardening. In the laying out and planting of Public Squares in large cities, regularity and symmetry are preferable, and in fact unavoidable. The surrounding streets usually intersect at right angles, and must have the official grade, and convenient access must be established from every side and corner; but even here variety and contrast may be introduced, in arranging trees and shrubs, so as to produce a most desirable deviation from the sameness of the surrounding streets and houses. But for a Rural Residence, or for a Park, which every city should have, we insist on variety to the fullest extent possible and obtainable, not alone in trees and shrubs, but also in every feature and outline in the drives and walks, and in lawns, lakes, ponds, and every other embellishment.

In planting, we produce variety by varying the distances as well as by grouping different kinds of trees and shrubs together, and in some instances by massing them, taking care, however, to obtain harmony at the same time. In all our cultivation of variety, harmony must be cherished. A Landscape gardener must be well posted in regard to the habits and development of all the trees and shrubs he may require, as harmony and variety are not effected by merely mixing trees together, and in giving them certain outlines, nor by assorting them into their respective varieties, but by assembling them with reference to similarity and contrast in habit and appearance.

The drive, forming the approach, should be convenient and short, and should not pass the front of the house before reaching it. We do not desire to view the best features of the grounds before arriving at the residence; on the contrary, it must be one of the principal endeavors to hide prominent features from the approach, otherwise the visitor will surely meet with disappointment.

In laying out the walks, we must bear in mind in the first place, never to allow the pedestrian to see more walk than what is immediately before him; and secondly, to form no walk without having a certain point of interest in view, to be passed or reached by it; it is absurd to make walks unless they are to serve a definite and reasonable purpose.

In our next we shall endeavor to conclude our general remarks on the principles of landscape gardening, and afterwards intend to be minute in regard to every feature necessary and desirable to make a rural residence complete.

POPULAR BOTANY.

CHAPTER II.

In our description, so far, of botanic life, we have dealt only with cells and their formation, as the elementary portions, that in the aggregate, make up all the compound organs of a plant; such as the root, stem, branches, and leaves. To obtain a clear and succinct idea of the growth and development of a plant, it is necessary to commence with the seed, and observe all the phenomena as they, in obedience to a regular law, gradually advance towards completion. Within a seed is contained all the ultimate parts of the plant which it represents, and it only requires to be subjected to warmth, moisture, and a proper supply of nutrition from the soil, to start out on that cycle of nature; commencing from the seed, passing through the different stages of plant-growth, and finally ending in just what it started with, *i. e.*, a seed.

When we place a seed in the ground, under circumstances favorable to its germination, we find it softens and swells, sending out two free ends, one of which pushes its head above the earth, while the other descends into the ground. This upward portion is called the stem; the downward part, the root; the plant is now established, and commences to perform its part in the economy of nature.

The first leaves of a plant exist in the seed in a rudimentary condition of more or less perfection; they are called *Cotyledons*, or seed leaves. As the plant progresses in growth, the root multiplies by branching, or giving off rootlets, which penetrate the soil in all directions, seeking the necessary material for its sustenance. At the same time, the upward part, or stem, elongates, giving off also branches, but unlike the root, these branches arise from definite points, and obey a certain law of development. The branches in their turn, give rise to other organs; the leaves. It is then seen, that a plant consists of certain essential organs, and upon their completeness, depends its future growth. These parts of a plant, viz: root, stem, branches and leaves, are called the *fundamental* organs of plants, or the organs of vegetation. To the root is given the duty of taking up the crude food of the plant, which passes through the stem and branches to the leaves, where it is acted upon by the light and heat, which action is a process of digestion. The nutriment so prepared is returned to the stem and root to be used in promoting the growth of new rootlets, branches and leaves; this action goes on continually multiplying its resources and its growth at the same time. After a while a new process begins, and a flower is developed, which finally ends in the production of seeds as the embryos of future plants.

In this outline of plant growth, we have used the higher order as an illustration, because they are really the typical forms of vegetable life. But there are other plants in which this action is materially modified, such as the *Ferns*, *Mosses*, and *Lichens*. With the ferns, we have no proper flowers, and therefore the embryotic seed disappears. As we pass on the downward grade, among the mosses and lichens, we loose all distinction between stem and leaves; lastly also that of root, and find the plant but a collection of simple cells.

In considering the organs of a plant, we shall take up first, the root, describing that, and then pass on to the stem, branches and leaves, in their regular order. The root, we have stated, is that portion which descends into the ground, giving the plant a permanent position, and drawing from the soil the crude nutriment for its growth. It differs not only from the stem in the direction of its growth, but also in giving off branches without regard to their order, and in not bearing leaves. Its surface is destitute of *Stomates*, or breathing pores, and in the greater number of plants it has no pith. Roots increase chiefly by the addition of new matter to their extremities, where it is deposited layer over layer; the supply coming from within. Therefore the growing ends of a root are made up of new and very delicate tissue, which enables them to absorb with great readiness the different materials in the soil. Absorbtion only takes place in these points called *spongioles*, or *spongelets;* and thus we see the danger in disturbing the root while the plant is in active growth.

During the season of growth, when the plant is making new branches and leaves, the root increases below the ground in proportion as the plant increases above; as the season draws to a close, and the leaves begin to cease their active work, the rootlets also cease to grow, and the tissue of the *spongelets* not being renewed, they at length become hard and dense, loosing their absorbing property and come into a state of quiesence; this is the proper time (if needed) for transplantation.

The roots of plants differ to a great extent one from the other. In *Annuals* (plants that live but one year), they are simply used as absorbents, and this alone. *Biennials* (plants of two years' growth), such as the carrot, beet, and turnips, not flowering the first year, accumulate a supply of nourishment in the roots for future use; these roots are said to be *fleshy*, and man, seeking everywhere for his

maintenance, has turned this action of nature to his own benefit. If these biennials are left in the ground, when the next season of growth comes on, they send up a large stem, which makes a rapid and vigorous growth, culminating in the production of flowers and seeds. This second year's growth is almost entirely at the expense of the previous store in the roots, and as the plant neglects to furnish new rootlets, it speedily perishes after the flowering is completed. There is a third class of plants called *Perennials*, which in addition to their first year's roots, are constantly producing new roots, and as fast as the accumulation of one period of growth is exhausted there are others to take its place. So the process goes on from year to year, and although a portion perishes every season, still the individual plant lives on, as an example of continuous growth.

There are roots which do not originate themselves in the ground, but still in all cases they follow the rule of seeking the dark, and to establish themselves in some kind of soil. These roots are called *aerial*, because they arise from the stem of a plant in the open air, and descend to the ground for their establishment. The *corn*, and *screw-pins* (Pandanus), are examples of this mode of root-development. In the case of true air plants, or *Epiphytes*, they not only strike in the open air, but throughout life maintain existence independent of the soil. These *Epiphytes* grow upon the trunks and branches of trees; their roots penetrate the bark, but do not draw any material from the tree, seeming only to act as hold-fasts for the plant which derive its nourishment from the air. On the other hand, in the case of *Parasitic Plants*, the roots push themselves down to the sap-wood of the tree, or plant, upon which they grow, and absorb the crude sap of the foster plant for their own use. Some *parasites* are not so generous; instead of crude sap, they take that which is already elaborated, and might be considered true vegetable *spongers*.

PRESERVING POLISHED STEEL FROM RUST.—A correspondent says that nothing is equal to pure paraffine for preserving the polished surface of iron and steel from oxidation. The paraffine should be warmed, rubbed on, and then wiped off with a woolen rag. It will not change the color, no matter whether bright or blue, and will protect the surface better than any varnish.

ROSE LORE.

A White Rose seems to have been unknown to the ancients, and, indeed, until comparatively modern times, consequently from *Rodon*, ruddy, its Greek designation, almost all the nations of Europe have adopted a name of synonymous meaning. *Rosa*, its Latin designation, has the same reference to color, and it is surprising—because without a parallel—that nearly every European nation has done likewise. In Anglo-Saxon it is *Rose;* in Welsh, *Rhos;* in Dutch, *Roos;* in German, *Rose;* in Danish, *Rose;* in Swedish, *Ros;* in Scotch, *Ros;* in French, *Rose;* in Italian, *Rosa:* in Spanish, *Rosal;* in Portugese, *Roseira;* and in Russian, *Rosa.*

The unanimity characterizing its nomenclature also characterizes the high esteem in which it has always been held. It was the flower dedicated to Love and its birthgiver Beauty—to Cupid and Venus. The arrows of Cupid were said to be formed of Rose thorns, and his wings of its petals; he is always fresh, ruddy, and smiling, and his hair as golden as the flower's anthers. The flowers were said to have been created white from nectar spilled by Cupid at a banquet of the gods, but that blood from the foot of Venus as she rushed to the aid of Adonis fell on the petals and stained them permanently.

A deity to whom a flower was dedicated by mortals seems to have exercised the rights of ownership, and to have re-dedicated that flower to such as he or she deemed meriting the distinction, or even as a bribe. Thus, Cupid, like a dutiful son, dedicated the Rose to Harpocrates, the god of silence, to engage him not to betray the evil acts of his mother Venus. Hence it became the emblem of silence; was held up as a polite check to the loquacious, and was placed upon the guest table to intimate that the conversation around it was confidential. With a similar intent the Greeks also wore Roses at their feasts; Comus, deity of the table, and Hebe and Ganymede, nectar-bearers to the gods, were crowned with Roses.

"None, crown'd with Roses, drink the insipid spring;
No joy to mortals thin potations bring.
Bacchus loves flowers; to Bacchus garlands dear;
Witness the starry wreath on Ariadne's hair."
—*Ovid.*

When auricular confession prevailed here, the English clergy wore commonly a Rose, and it frequently was retained by them, until about a century and a half since.

The Rose also was placed in the hand of one of the Graces, and wreathed the heads of two of the Muses, Erato and Thalia; it was also the emblem of youth, and sculptured on the tombs of the maiden dead. Even the tombs of all ages were decked with its flowers.

"When life 's no more their odors shed
A grateful fragrance o'er the dead:
'Tis well, for when their charms decay,
And sinking, fading, die away,
Triumphant o'er the work of time,
They keep the fragrance of their prime."—*Anacreon.*

Even now in some parts of Wales it is customary to plant a white Rose upon a maiden's grave, and a red Rose on the grave of any one of noted excellence.

The Rose has always been preferred as the emblem of Beauty but it is also associated with effeminacy and voluptuousness. Gallienus, the Roman Emperor, justified this association by having in summer time a bed of Rose petals, and he, like Smindyrides, complained that a crease in one of them caused pain.

At Athens, early in May, at the festival of Hymen, the maidens and lads were crowned with Roses. Similar crowns were awarded to poets, and the Feast of Roses was one of the assemblies of the Troubadours.

Nor has the Rose escaped from association with superstition. In mediæval times the maidens gathered Roses on Mid-summer eve,

"And bid it, for her shepherd's sake,
Await the new year's frolic wake—
When, faded, in its altered hue
She read, 'My lover is untrue;'
But if retained the crimson paint,
Her sick'ning hopes then ceas'd to faint."

It has been a custom for the popes annually to bless and perfume a Golden Rose tree, and to send it to some sovereign or other eminent person who has markedly served the cause of Romanism. The French Empress had it presented to her by the present pope. This ceremony of blessing the Golden Rose was instituted by Pope Leo IX., who was elected to the pontificate in 1048. When the monastery of Saint Croix, in Alsace, was founded, he stipulated that the brethen should send to the pope yearly a Golden Rose. The ceremony of its presentation to and benediction by the pope takes place at Rome on the fourth Sunday in Lent. Edward I., of England was not only a Crusader, but so aided the popes in their Sicilian wars, and so sumptuously furnished their table with a golden service, that it is probable "the Golden Rose" was presented to him, and that consequently be adopted it as his badge. At all events, he was the first English monarch who adopted the Rose as a badge, and his was a golden Rose on a green stalk. The red Rose was first assumed by the Duke of Lancaster, John of Ghent (Gaunt as usually erroneously pronounced and spelled), in the reign of Edward III., but Henry IV. was the first of English kings to adopt that badge. Edward IV., among other badges, had the white Rose, and it was a white Rose *in soleil*—that is, surrounded by rays. The succeeding kings had the same badge, but Henry VII. had for his badges the white and red Rose joined. Henry VIII. had both the red Rose alone and the white and red Roses joined and crowned. Queen Anne Boleyn had a white crowned falcon, holding a sceptre in her right claw, perched on a golden trunk, which bore both white and red Roses. Catherine Parr had a maiden's head crowned, issuing out of a bush of white and red Roses, very appropriate, considering the narrow escape from the executioner she had as Henry VIII.'s wife. Edward VI.'s badge was of red and white Roses combined. Mary had a red and white Rose and a Pomegranate, in compliment to her Spanish husband, knit together. Elizabeth had not only the red and white Roses, but many other devices. James I. had for his badge a demi Rose crown, impaled with a demi Thistle. Anne had the Rose and Thistle borne by one stem, and so had George I. Queen Victoria's badge is a red and white Rose united.

PRESERVING HOPS.—A new improvement in sacking, or baling hops, now in favor in Canada, is to put wide, strong sheets of paper inside the sacking. As paper is a non-conductor, and air-tight, it is believed to be a preventive of the rapid escape of lupuline.

TENDER BEDDING PLANTS.

We often wonder why such beautiful flowering plants as the *Cineraria*, with its endless varieties of blooms, the *Salvia splendens*, with its magnificent scarlet spikes; or some of the *Begonias*, with their exquisite drooping clusters, are not cultivated to a greater extent, as bedding plants in the open ground, during the summer. When we inquire as to the reason for this, we are told that they would perish during the winter, thereby entailing a great deal of trouble and expense consequent upon their replacement in the spring. As bearing on this point, we re-produce the argument of an Eastern nurseryman, who says: "Why such excessive economy in flowers alone? A dollar for a dinner, or an entertainment of a few hours; fifty, or a hundred dollars for a new suit, is not deemed extravagant now. Then the endless expenditure for eating, drinking, display of jewelry, confectionery, ale, tobacco, etc. All these things may to a certain degree, be essential to our mode of life, but not necessarily so. Why not love and adorn our homes at the same time; laying out each spring a *few* dollars, to bedeck them with new smiling summer-dresses, which shall give us at each outgoing and incoming, a glad welcome. Patronize, if we will, all manner of luxuries, but let us not in the mean time forget our nurseries and floral establishments."

RICINUS COMMUNIS.—(CASTOR OIL PLANT.)

This plant is a native of the East Indies and Africa, where it approaches somewhat in character, and height that of a tree, and contains a small amount of woody fibre. In cooler climates, it is an annual plant, growing all the way from five to twenty feet in height. The stalk is of a vigorous growth, being round, smooth and hollow. The leaves are large, bluish-green in color, serrated (that is, tooth-like upon their margins) and pointed. The foot stalks of the leaves are long, and inserted into the disks. The flowers are produced in a terminal spike, being monœcious; the same plant bearing both male and female blossoms. The seed-vessels are covered with spines, and contain three flat, oblong seeds, which are expelled by the bursting of the capsule.

It is from the seeds of this plant that we obtain what is known as Castor Oil. There are three modes of extracting the oil: one by contusing the seeds, (after having gently warmed them,) and then subjecting the bruised mass to a heavy and continued pressure, allowing the oil to flow into a proper receiver. The oil obtained in this manner, is called "cold expressed," and commands the highest price in the market. The second method is to free the seed from their husks or pods; bruising them, after which they are tied in linen bags, and boiled in water; the oil which the mass contains, rising to the surface, is then carefully skimmed, and bottled for use. The oil procured in this way is considered by some, milder in its action than that made by pressure; it has, however, one fault, that of becoming sooner rancid. The third process is mostly practiced in France, and is by means of alcohol; it has nothing to commend it over the other methods, and the expense is greater, while the product is inferior in quality.

The "Castor bean" has been largely introduced, and cultivated in Europe, and the United States; it has also become so naturalized in the West Indies, as to occupy to a certain extent the position of a native plant. In the Eastern States, great attention has been paid to its cultivation, and a large amount of trade in the oil has grown up. The climate of California is well adapted for the cultivation of this valuable plant, and we find a number of cultivators of the soil, turning their attention to it. If we are not mistaken, Dr. McDanniels of Marysville, was the first in California to cultivate it on a large scale.

The plant requires no great amount of labor; about the same as that given to the cultivation of corn. The hills should be about six feet apart, and so arranged as to allow at certain intervals, passage-ways for the wagons used in gathering the crop. Not more than one plant should be allowed to grow to the hill.

It is said that three pounds of seed will suffice to the acre; we are inclined to think this a little under the amount required. The planting should be done during the last of March, or the first of April, and the seeds will be fit to pick about the last of July; at which time they will begin to turn blue. One hundred pounds of beans produce about five gallons of oil, which sells very readily in this city at two dollars per gallon, manufacturers price. We find upon inquiry that the California oil is much preferred over that imported; the only trouble about it being a darker color, which is easily remedied by bleaching it in the sun, a method that has no bad effects upon the oil.

There is no reason why we should not produce all the oil needed for the Pacific coast. Many farmers are deterred from raising the bean, under the impression that the demand for it is not sufficient to make its cultivation an object of profit. Such is not the case; castor oil is not only used as a medicine, but for many other purposes. We hope that some of our farmers will send us their experience in the cultivation of this plant, promising on our part, to set forth their ideas, theories and facts, in the best possible manner.

PASTURE GRASS FOR CALIFORNIA.

A very important desideratum for California, and one which has hitherto commanded but little attention, is food for our cattle, horses, sheep etc. During the winter and spring, we have no great difficulty in procuring a sufficient supply for them, as nature furnishes all that is requisite, and in abundance throughout the largest portion of the State. But in the summer and fall months, the live stock on most of our ranches suffers to a great extent (particularly in a long dry season) for the want of proper food. Many of our stock farmers sustain very heavy losses from this cause, and they will always be liable to meet with them in the future, unless something is done to clothe our hills and valleys with vegetation, which shall furnish food for their stock, during the dry seasons. We are of the opinion that very little enterprise has been shown in this direction; and this fact goes far towards demonstrating the want of a proper attention to one of our best interests.

The meats furnished in our markets should be better in quality and cheaper in price; the butter more plentiful and of a lower rate. In fact, it is plainly to be seen, that the working man cannot afford to eat good meat, and good fresh butter, on account of the extravagant prices these articles command. If our pastures could be improved so as to furnish our cattle with good nourishing food all the year around, butter and meat could be supplied to us at a much lower rate.

The question arises at once, whether our hills and valleys are able to produce any kind of good food throughout the dry seasons; we think they are, and it only requires some enterprising stock farmer to take hold of the matter, and demonstrate its practicability and utility. To do our part in this work, we would recommend the introduction and cultivation of the Bermuda Grass, (*Cynodon dactylon*) which is now so extensively cultivated in the Southern States, and especially in Texas, the great cattle growing State of the Union. The Bermuda Grass throws out stems (or runners if you please) from three, to four feet long; at short intervals these runners strike root and so form new plants, which establish themselves so quickly and numerously, that in a very short time one plant will form an extensive and dense sod, or turf. This grass grows well in very dry soil, and will keep green during the whole summer, it will grow well in soil of any character, except where too compact, in which case, the roots of the young plant cannot penetrate sufficiently to establish themselves. One difficulty in the introduction of this grass, is its want of seeds, of which it furnishes a very small quantity. It is therefore necessary to depend upon the roots and runners for its propagation. It is only necessary to cut the roots and stems into pieces from two to three inches long, and to plant them; every joint planted will make a new plant, and a good sod may be formed in a very short time, say in one or two years.

When the Bermuda Grass has once established itself, it is very hard to exterminate, and should therefore be grown in places where its spreading does not interfere with the cultivation of other crops. This grass will undoubtedly thrive well in the Sacramento and San Joaquin valleys, thus affording a large amount of grazing land to the State. The roots can be obtained by writing to some of the nurserymen of the Southern States, who no doubt can furnish them to any extent. A few hundred dollars would secure the planting of a considerable tract of land.

There is still another use to which this grass can be put, and that is to stop the continual drifting of our sand hills. The grass grows well on sandy soil, and has the effect of not only clothing it with a mantle of green, but by its roots holding the particles somewhat together. It would be well for some of our large land owners around San Francisco, to undertake the introduction of this grass, and we are sure, that the outlay would return a handsome percentage, in the increased value of their property.

SHADE TREES.

Not long since we paid a visit to the neighboring City of Oakland. Our purpose was to see how our horticultural friends were progressing, and we much enjoyed the stroll among the enterprising, go-ahead people of the other side of the Bay, and we hope always to deserve the courtesy and kindness we received from the leading horticultural men. If the same good feeling towards our new enterprise, the "Horticultural Magazine," is manifested in other localities in this State, we shall meet with complete success.

When we speak of the enterprise of the people across the Bay, we do not refer so much to th ir new buildings, and such like improvements, which will return in a short time ample interest on the capital invested, but we allude to their desire and determination to improve the public streets and roads by planting shade or ornamental trees, and thereby setting a praiseworthy example to other communities, if they had any spirit of public enterprise among them.

Oakland presents the appearance at the present time of a forest of trees, and is a park in itself, and while walking around there, the air we breathed seemed so pure and fresh, the shade of the trees so grateful, and the perfume of the flowers so exhilirating, that we forgot that we were traversing the precincts of a busy, thriving city, the third in rank in the State. Why is it that we have no such improvements in San Francisco? It has been said by some that deciduous trees will not thrive here on account of our strong winds. All we have to say is that this is a very erroneous idea. We are certain that deciduous trees, if properly planted, can be maintained here, provided that some little care and attention is paid them. If we only apply the pruning knife properly we will have no difficulty in raising well-shaped trees along our public streets. We will instance the few maple trees growing on Stockton street; during spring and summer we never pass those trees without admiring their beautiful foliage, and we very often hear other passers by at the same time expressing their admiration of the same trees. Why cannot we have, say 20,000 of such trees ornamenting and blessing the thoroughfares of this City? The answer, doubtless, will be, "It don't pay." Here is the secret; there is neither taste, nor public spirit for anything of the kind. We cannot assign any other reason for the indifference of the people. The expense of planting out a few well-selected shade trees in front of our homes and places of business would be but little, and we feel convinced that trees so planted, with an outlay at the present time of a few dollars would not be parted with five years hence for ten times their original cost. Is there no one who will inaugurate the planting of shade trees in our streets? The maple tree, (several varieties), the Locust, the Eucalyptus, the Platana, the Catalpa, etc., can be had at a reasonable price in our markets, and will do well here if properly cared for.

We have visited all the principal cities and towns throughout California within the last five or ten years; Sacramento, San Jose, Stock-

ton, Nevada and many others. Everywhere we found trees planted along the streets, even in the principal business portions; but here in San Francisco, where nature has done so little for us in this matter, but where wealth and intelligence are abundant, and taste should not be wanting, we find an indifference entirely unaccountable.

The people of San Francisco are justly celebrated for their liberality in all charitable and patriotic causes, but outside of these there is no public spirit of any kind. The all-absorbing subject, the acquisition of the Almighty Dollar, leaves no room for the consideration of the Beautiful.

Let us picture to ourselves a few hundred shade trees along Kearny street! What a protection would they afford as well from the sun as from our strong winds. Again let us imagine forty or fifty trees around the Grand Hotel! What a finish it would give; would it not be one of the chief attractions of San Francisco? Of course it would not do to plant such evergreens as Pine, Cypress, etc., of which we have already too many within our city, but the trees we have already mentioned are in every way suited.

Oakland has every reason to be proud of the cultivated taste she has displayed in her public improvements, and we hope that San Francisco will follow her example.

THE SUGAR BEET—(*BETA CICLA*).

This root now attracting so much attention in some parts of California, is cultivated for the sugar it contains. A factory has already been established at Alvarado, Alameda county, for the manufacture of this sugar, and it is necessary for the prosperity of this new undertaking, that the beet shall be raised in sufficient quantity to supply its running capacity. For the furtherance of this object, we propose to give all the information at our disposal in regard to the proper cultivation of the root.

The soil best adapted to the sugar beet, is a deep, sandy loam; although, it has been grown, with fair success, in a great variety of soils. The ground should be ploughed once in the fall, and again in the following spring, before the seeds are planted: we advise deep ploughing on general principles, and particularly in this case, or the main root will be apt to form side roots, which do not contain as much saccharine matter as the main body of the root Four pounds of good seed should plant one acre; if the planting is done during dry weather, it will be better to soak the seeds in water for two or three days, in which case, the plants will make their appearance, in from ten to twelve days after planting. The rows of plants should be about eighteen to twenty-four inches apart, and in the rows, twelve to eighteen inches; every plant should be entitled to about two feet square, for its proper development. It is of great importance to work the ground often, so as to keep the surface in a porous condition, which will enable the atmosphere to more readily penetrate the soil, and also allow the roots a greater supply of oxygen. It is equally important to keep the earth well up to the neck of the plants, as the exposed portion of the root — generally of a greenish color—contains more salt. When the leaves loose their vivid green, and begin to assume a yellowish hue, the roots should be gathered. Plants cultivated under this mode of treatment, will furnish a greater percentage of sugar, and, as a consequence, be of more value to the manufacturer.

The sugar beet, in a warm climate, contains more sugar; yet we believe if the warm climate is assisted by a moist atmosphere during the nights, the product would be much greater in proportion to the quantity of beets. In Germany, the best variety, is supposed to be the "*Imperial Sugar Beet*," of which an acre will produce from eight to ten tons, yielding about 1,000 or 1,200 pounds of sugar. In California, the raising of sugar beets is a new enterprise, and we shall be pleased to receive any information in regard to its cultivation.

STRAWBERRY SHIPMENTS.—The consumption of strawberries in this market is enormous. During the last season we received 11,854 chests of the berries from Santa Clara Valley, and 400 chests from Mission San Jose—12,254 chests in all, averaging 96 pounds to the chest, making, in the aggregate, 1,176,384 lbs.

A SMALL FARM.

We paid a flying visit the other day to San Leandro, Alameda county, and we had the pleasure of making the acquaintance of Mr. R. S. Farrelly, who is the owner of fifty-one acres of farming land, situated on the road leading from San Leandro to Brooklyn. All the surrounding country is divided into small orchards, of from five to ten acres; and the numerous residences, with their well tilled fields, gave signs of general prosperity, while on all sides we noticed activity and enterprise.

Mr. Farrelly is an enthusiastic horticulturist, but does not experiment much with anything unless he is pretty certain of success, and therefore his experience is of practical value. We are under obligations to him for many interesting items, which we have taken the liberty of laying before our readers, to show them what can be done on a small farm.

About ten acres of his land are devoted to fruit, and the balance is rented out for general farming and gardening purposes. The ten acres, of which he takes care himself (with the assistance of but one man), are under a high state of cultivation. He has 3,000 plants of the Lawton Blackberry, of which 1,500 are two years old, the balance, one year; they occupy about two acres of ground, the plants being set four feet apart in the rows, with eight feet between the rows. Of his two year old plants he gathered this season, 3,900 pounds of berries, which sold for eight cents per pound, average price; he expects three times that quantity from the same vines, the coming season. The total expense of keeping 1,500 plants (or one acre) of blackberries in order, including the cost of gathering the fruit, did not reach fifty dollars for the year. He has also about 20,000 plants of the Cherry Currant, which are planted between his young Cherry trees; the trees themselves being of an upright growing character, and planted forty feet apart. His currant bushes are planted two and a half feet apart in the rows, and the rows are five feet distant from each other. He has no experience yet as to the result of this plantation. Of cherries, he has two hundred and fifty trees, of which one hundred and fifty are young, and not in full bearing; they have paid him at the rate of ten dollars per tree. The varieties which he cultivates most successfully, are the Black Tartarian, Black Pontiac, Elton, Graffian, or Yellow Spanish. He has two hundred Pear trees, of which he considers the best are the Bartlett, which readily sold this season for two dollars per box, while last year they only brought fifty cents. The Flemish Beauty (a very fine pear), he sold during the summer at one dollar per box; the Seckel, which ripens in August, brought two dollars. Of winter pears, his best are the Winter Nellis, which he is now bringing into market, receiving for them two dollars and a half per box, and the Easter Beurre, ripening during December and January, which were sold last year at one dollar and a half per box, but will bring much more this year, as the supply of pears is rather limited. A box of pears contains about sixty pounds, while a box of apples generally averages only fifty. He cultivates about three hundred apple trees, the best varieties being the White Winter Pearmain, Yellow Newtown Pippins, and the Spitzenburg.

From all these facts we concluded that the ten acres under cultivation, yield to Mr. Farrelly over $3,000 per annum, and we must consider such a result as a strong inducement for the inauguration of similar enterprises. We would not advocate the fruit raising in particular, as the prices would be greatly reduced if everybody should embark in this business, but we are convinced that a farm of ten acres, and even much less, will be very remunerative if cultivated properly. There is a growing demand for many articles of horticultural and agricultural productions, at very fair prices, and we shall from time to time point out what can be produced on a small farm, to pay well for the time and capital invested.

LETTER FROM DR. VON MUELLER, MELBOURNE.

We call the attention of our readers to the following letter from Dr. Von Muller, Director of the Melbourne Botanical Gardens, Australia. It is upon a subject of considerable interest to us, and points out a number of trees, and shrubs, whereby we can arrest the continual drifting of our sand hills. Dr. Von Mueller is a scientist of world-wide reputation, and therefore what he says should always command a careful consideration.

MELBOURNE BOTANICAL GARDEN,
July 25th, 1870.

It needs not my assurance, dear Mr. Miller, that I will be very happy to afford any information to aid in so important an object as arresting the sand drift of your coast, and to utilize those spots by covering with vegetation. The plants which I employ here for similar purposes are Casuarina quadrivalvis, Pinus Pinaster, Pinus Halepensis, Melaleuca parviflora, several species of Mesembrianthemum, Cynodon dactylon, Agrostis stolonifera, Arundo arenaria, Araria pyonan, Festuca litoralis, Spinifex hirsutus, Araria laphantha, Tetragnia expansa, Leptospormum (Fabricia) laevigatum, several species of Broom plants.

* *

It will require, to raise many of the plants indicated, at first in nurseries, and then to plant them out in places where by brush, and branches of any kind, the ground is sufficiently protected to allow any young plant to develop itself. It is scarcely necessary to remark, that all traffic, particularly that of goats, cattle, horses, etc., must be rigorously excluded from the sand, which is to be checked; fencing of the ground becomes therefore requisite.

Your letter arrived just at the eve of the departure of the mail for America, so I may not have time to get ready any seeds for you. * * I will be very happy to enter with you into direct interchanges, for which purpose the newly established line of steamers affords such great facilities. With my best wishes,

Your friend,

VON MUELLER, M. D.

The Blackwood, or Lightwood (Acacia melanoxylon), grows chiefly in rich Basalt.

LETTER FROM "HORTUS."

San Francisco, Nov. 17th, 1870.

Dear Sir: The *California Horticulturist* was handed to me by a friend two days since. I like the idea of it, think it may be made useful, and intend to be a subscriber; I am a bit of a florist myself, although only an amateur, and I like the chapters on the treatment of the Camellia and Pansy. How about the Azalea? Can't get that length of cutting off any of my plants, nor from any of my acquaintance. Should like to see yours. If I were to attempt to take off a three or four inch slip, I should be down into the two year old wood, instead of the half-ripe. Will try your plan of hardening the young plants. I can strike them, but they always fog off afterwards. By the way, I see you have a chapter on "Woodward's Gardens," taken from the *New York Horticulturist.* I know what you will say directly: that you are not responsible for the bad spelling; but perhaps we differ. You would not knowingly advise us in the treatment of our plants so as to cause us to lose them. Why then carelessly allow the mis-spelling of the names? An inadvertance—all right. But let us for the future look to you as an authority on this point; a most essential one. Common English bad spelling is common enough, and most of us merely smile at it, but very few of us have the authority at our elbows for verifying scientific orthography. By the way, cannot you drop a word in Woodward's ear, I see he advertises with you, and you inserted that article for him, so you must be acquainted. Just hint to him that although many who see his few labels, (many do not) do not read them, yet there are some who feel annoyed and disgusted to observe that the same label will do duty for widely different species in the course of one month. It savors much of Barnum; and I must remark that since the visit of Barnum to this coast I fancy Woodward's Garden seems much Barnumized. 'Tis a pity. He has a great many nice trees, shrubs and plants, and the study of them is highly instructive, but 'tis annoying and bewildering to

see them mis-named. Tell him 'twill cost him but little to have them re-named, and then make his gardener keep them correctly labeled. He is but a poor gardener if he cannot do that. Excuse any brusqueness in this letter, it is the bluntness of a friend.

Yours truly,

HORTUS.

LETTER FROM OAKLAND.

Oakland, Nov. 14th, 1870.

Sir: I am much pleased to see the first No. of your Magazine, and wish you every success in your enterprise, as I believe it will be productive of great benefit, by assisting to obviate an evil of which I am about to complain.

It appears to me that nearly all that has been done on this coast in agriculture and horticulture has been desultory in character; there has been a want of unity of action; a lack of public spirit; each cultivator seeking his own individual interest regardless of his neighbor's welfare, or the general good; and consequently a continual groping in the dark, a constant repetition of unsuccessful experiments by those who in very many cases could ill afford the time and money; when a little open-hearted liberality of spirit, some small reciprocity of feeling between residents even of the same district, would have saved much valuable tim and a large amount of dollars and cents. A man, perchance, has experimented in a particular mode of treatment of a certain plant, and has failed, he has seen his neighbor making a similar attempt, instead of a kindly word of warning and advice, he has chuckled selfishly over the inevitable disappointment; he has suffered a loss himself, and now let neighbor Jones find it out, why should he tell him? when mayhap Jones could reciprocate the kindness by a word in season about some other enterprise.

There has been too much grasping after the dollar as if that was the *summum bonum*, the only thing worth living for; with the luck of Æsop's dog, who lost his beefsteak through trying to seize the shadow of it also.

I met an intelligent man not many months since, who, when asked to experiment on the cultivation of a particular plant, and informed that he could be supplied with the necessary cuttings, and further told that others living in widely separated localities in the State would also be furnished with like material, on the condition that the results should be made public; in order to test climate and soil, as well as mode of treatment; replied by requesting all the cuttings, and stating that he should desire to keep his experiments to himself, so that if successful, he might derive the full benefit, and possibly a bonus from the State; he said that he could not endure that any man should excel him in any thing he undertook, or achieve a success based on his unsuccessful effort.

But this loss of time and money is not due solely to selfishness, many would be glad to record their attempts, whether successful or otherwise, in the treatment of divers crops, seeking only to know how others have sped; but they know not how to interchange their experience. This opportunity your welcome magazine affords, and I for one intend to avail myself of it, and repeating my wish for your success, believe me Sir,

Yours truly,

CULTIVATOR.

AUSTRALIAN GUM TREES—(*EUCALYPTI.*)

BY PROF. BOLANDER.

Since the Australian Gum-trees (Eucalyptus) are so extensively planted in California, it becomes almost a necessity to discuss and investigate the advantages and disadvantages offered by the various species of that extensive genus, the more so, since the time is fast approaching, in which forest-culture must receive our serious attention. I propose therefore to offer to the interested reader a summary of facts, derived from various books and reports, written by professional men on the subject.

The word Eucalyptus, the botanical term used to designate the genus, is derived from *eu*, "well" and *kalypto*, "to cover," in allusion to the lid which covers the calyx until the stamens are fully developed. According to

the Linnean system, the genus belongs to the class of Isocandria, and according to the natural system, to the order Myrtaceæ, derived from myron, balsam or myrrh.

The flowers have no petals, and the stamens which are very numerous, are, with few exceptions, white, whilst the tube of the calyx is permanent, and the capsule three, four, five or six celled. Generally speaking, the leaves are alternate, but in some species they are opposite, and in others, they are alternate and opposite in the same tree. The arrangement of the flowers is for the most part in umbels, varying very much in size, as well as in the number of the florets, and these umbels are sometimes axillary or lateral, and sometimes corymbose or paniculate. Being evergreens, and probably lasting for many generations, the species of Eucalyptus undergo many changes in their appearance, for while some of them are wholly or partially covered with bark in their youth, and become smooth as they advance in years, nearly all of them vary in the shape and size of their leaves in proportion to their age. As a general rule, the leaves are longer and broader on the young trees, whilst in some species they are first opposite, and then alternate. Being fixed vertically, instead of horizontally, they afford but little shelter from the burning rays of the summer's sun, or from the drenching showers which sometimes overtake the weary traveler; and on the whole, the Australian forest presents a dull and unvarying aspect, uninfluenced by the bright fresh verdure of spring or the gorgeous and variegated tints of autumn. And yet these Eucalypti are of immense importance, whether considered in reference to the value of their timber, the medicinal properties of their barks and resins, or the essential oil of their leaves; whilst the colossal dimensions and towering heights of some species are perhaps unrivalled in the world. According to a statement recently published by Dr. T. Mueller, Director of the Botanic Gardens at Melbourne, the Karri (*E. colossea or diversicolor*) attains in favorable spots the height of four hundred feet, whilst the messmate (*E. amygdalina*) has been known to measure four hundred and eighty feet.

Of the one hundred and thirty-five species known, I will enumerate those that may become useful to California.

1. The Mountain Blue Gum (*E. eugenioides*). This tree attains a height of one hundred feet. Its wood is much used by wheelwrights and carpenters, but is inferior to the Blue Gum of Cumberland (*E. goniocalyx*).

2. Flooded Gum (Blue Gum of some districts) (*E. goniocalyx*). This is one of the most useful trees. It generally grows near the rivers and creeks, but it frequently occurs as a forest tree. It attains a height of eighty feet and more, and a diameter of seven feet. The timber is extensively used for ship-building purposes, such as scantling, battens, flooring-boards, posts and rails, and ship's planks; it is also excellent for the naves and felloes of wheels. Many a tree yields from six thousand to seven thousand feet of timber. It grows rapidly and its specific gravity is less than that of any other gum.

According to Dr. Mueller, it is also called "Spotted Gum." The foliage is rich in volatile oil. The bark yields a good packing paper, but hardly material for any good writing paper.

3. The Red Gum or White Gum. (*E. rostrata*) Flooded Gum, also Yarrah. It attains a height of one hundred feet. Its timber is said to be impervious to the Teredo navalis. Large quantities of it has been used on railways. The specific gravity varies from 0.858 to 0.923. The paper prepared from the bark of this tree, proves much coarser than that of the (*E. obliqua*); the pulp may be either used as admixture to that of packing-paper and paste-boards, or in the composition, or perhaps as sole ingredient for blotting and filtering paper. The gum-resin of this special kind is preferred to others as a therapeutic astringent, and is particularly administered in Europe and India in cases of diarrhæa which assume a chronic state.

"A curious hardwood, remarkable for the conical projections from the sapwood into the

bark, and for the inner or older layers of wood into the next younger or outer layers."—*Knight's Report*, 1862.

4. Hickory or Leather Jacket, (*E. punctata*). This species attains a considerable height, and is frequently of a spreading habit. It is a good wood for fencing and burning, and is exceedingly tough and durable. Posts of this tree were perfectly sound after having been half a century in the ground, and next to Iron Bark there is no wood more suitable for railway sleepers.

5. Blackbut (*E. pilularis*). This is one of the largest and most valuable species of the genus. In some places it has been found to be more than forty-six feet in circumference at five feet from the butt, and one hundred and fifty feet to the first branches. The wood is excellent for house-carpentry, ship-building, and indeed for any purpose where strength and durability are required. From experiments made at the Universal Exhibition, held in Paris, 1855, it was ascertained that the specific gravity of Blackbut is 0.897, and that next to the "Rough-barked Iron Bark" no species of Eucalyptus is known to bear a greater crushing strain in the direction of the fibre. This tree prefers a good soil, and is rapid in its growth.

6. Box (*E. hemiphlaia*). This tree is widely diffused and indicates good grazing country; it rises to the height of one hundred and eighty feet, with a diameter varying from forty-eight to seventy-two inches, and the timber is reported to be of first rate quality for size, hardness, toughness and durability. It is also an excellent wood for domestic use, as it burns with great brilliancy, and emits a large amount of heat; but it does not stand long in the ground, as it suffers from dry rot. The specific gravity is 1.129.

7. Forest Mahogany (*E. resinifera*). "Red." The name red is taken from the color of the wood. The wood of this species is very strong and durable, and is extensively used for fencing, beams, rafters, and rough work. It may be mentioned as a remarkable instance of its durability, that some rafters of it which were placed in St. John's Church, Parramatta, in 1798, were found in a perfect state of preservation in 1852, when the church was pulled down. Some portions of these rafters were dressed up and forwarded to the Paris Exhibition, 1855.

8. Messmate. (*E. amygdalina.*) This tree attains near two hundred feet in height. Its wood is not much valued.—*Wm. Woolls Report.*

This is one of the so-called Peppermint-trees, more oily in its foliage than any of its congeners. The inner bark is adapted for the preparation of all kinds of coarser paper.

The marvellous height of some of the Australian, and especially Victorian trees, has become the subject of close investigation, since of late easier access has been afforded to the back-gullies of our mountain-system. Some astounding data, supported by actual measurements, are now on record. The highest tree previously known was a Karri—Eucalyptus (*E. colossea*), which rises to nearly four hundred feet. Into the hollow trunk of the Karri three riders, with an additional pack-horse, could enter and turn in it without dismounting. A fallen tree of *Eu. amygdalina* was measured and found to be four hundred and twenty feet; another Eucalyptus measured by Mr. Klein was found to be four hundred and eighty feet. Mr. Heyne obtained as measurements of height of a tree of *Eu. amygdalina:* Length of stem from the base to the first branch, two hundred and ninety-five feet; diameter of the stem at the first branch four feet; length of stem from first branch to where its top portion was broken off, seventy feet; diameter of the stem where broken off, three feet; total length of stem up to place of fracture, three hundred and sixty-five feet; girth of stem three feet from the surface, forty-one feet. Another one measured three feet from the base, fifty-three feet in circumference. Another was ascertained to measure eighty-one feet at a distance of four feet from the ground.

These enormous heights are, by no means, isolated cases; but there are vast masses of timber-trees in rich diluvial deposits of shel-

tered depressions that compare favorably with the dimensions given. Extensive comparisons instituted in the Botanic Gardens (at Melbourne) prove several species of Eucalyptus, more particularly *E. globulus* and *E. obliqua*, as well as certain Acacias—for instance *A. decurrens*, or *A. mollissima*—far excelling in their ratio of development any extra-Australian trees even on dry and exposed spots. This marvellous quickness of growth, combined with a perfect fitness to resist drought, has rendered many of our trees famed abroad, especially so in countries where supply of fuel or of hardwood is not readily attainable, or where for raising shelter, like around the cinchona-plantations of India, the early and copious command of tall vegetation is of imperative importance. On this I wish to dwell, that in the Australian vegetation we probably possess the means of obliterating the rainless zones of the globe, to spread at least woods over our deserts, and thereby mitigate the distressing drought, and to annihilate, perhaps, even that occasionally excessive dry heat evolved by the sun's rays from the naked ground throughout extensive regions of the interior, and wafted with the current of air to east and south, miseries from which the prevalence of sea-breezes renders the more littoral tracts of Australia almost free. But in the economy of nature, trees, beyond affording shade and shelter, and retaining humidity to the soil, serve other great purposes. Trees, ever active in sending their roots to the depth, draw unceasingly from below the surface-strata those mineral elements of vegetable nutrition on which the life of plants absolutely depends, and which with every drooping leaf is left as a storage of aliment for the subsequent vegetation. How much lasting good could be effected, then, by mere scattering of seeds of our drought-resisting acacias and eucalypti at the termination of the hot season along any water-course, or even along the crevices of rocks, or over bare sands or hard clays, after refreshing showers? Even the rugged escarpments of the desolate ranges of Tunis, Algiers and Morocco, might become wooded; even the Sahara itself, if it could not be conquered and rendered habitable, might have the extent of its oases vastly augmented. Fertility might be secured again to the Holy Land, and rain to the Asiatic plateau or the desert of Atacama, or timber and fuel be furnished to Natal and La Plata. An experiment instituted on a bare ridge near Melbourne demonstrates what may be done. *Report of Dr. T. Mueller.*

9. Mahogany-eucalypt. (*E. marginata*). The timber of this tree exhibits the wonderful quality of being absolutely impervious to the inroads of the Limnoria, the Teredo and Chelura, those minute marine creatures so destructive to wharves, jetties, and any other works of naval architecture exposed to the water of the sea; it equally resists the attacks of Termites. The natural supply of this important timber will, sooner or later, prove inadequate to the demanded requirements; and it must be regarded as a wise measure of the governments of France and Italy now to establish this tree on the Mediterranean shores.

10. Stringy Bark. (*E. obliqua*). This species varies considerably, according to the soil and elevation in which it grows, and according to the proximity to the sea-coast. Wood forwarded to the Exhibition ranged between one hundred to two hundred feet in height. It is considered excellent for house-carpentry, such as flooring-boards, battens, etc. In some parts of the Colony the Stringy Bark is valued for fencing purposes. According to Dr. Mueller it constitutes the main mass of the forests of the more barren mountains, the height of trees of greatest size ranging from three hundred to four hundred feet. The Doctor also states, the paper prepared from the bark of this tree is not merely suited for packing, but also for printing, and even writing. It may also be employed for mill and paste boards. The pulp bleaches readily. Its bark, as is well-known, is extremely thick and bulky; it moreover, separates with the utmost facility, and is hence universally used for thatching rural dwellings. It yields readily to mechanical appliances on account of its lax and loose tex-

ture, and is also easily acted upon by caustic soda for conversion into pulp. It has also been successfully manufactured into door-mats. *Wm. Woolf's Report.* Celebrated for the excellence of treenails it yields. *Knight's Report.*

11. White Iron Bark. (*E. paniculata.*) This is one of the most valuable trees of the Colonies. The specific gravity of the wood is one thousand and sixteen, and the breaking weight or transverse strain, beam four feet between bearings, one seven-eighth square, four thousand five hundred and nineteen pounds. It is the most valuable of all the Iron Barks, remarkable for its smooth, uniform outer bark, and its very hard, tough, inlocked, strong wood. The wood is highly esteemed by coach-makers and wheelwrights for the poles and shafts of carriages, and the spokes of wheels, and a great quantity has lately been used for piles in constructing wharves, and also for sleepers on railways. The presence of Iron Bark generally indicates a poor and indifferent soil.

12. Blue Gum. (*E. globulus.*) Among the woods of Tasmania this is one of the most useful. It attains a great size and yields ship's knees of any dimensions. The blue-gum is in great demand for railway-sleepers, felloes of wheels, etc.

PUBLIC PARKS.

All the larger cities of Europe have their parks, which not only prove to be great ornaments, but are the sources of pleasure, recreation, and health to the old and young, the rich and poor, the sick and healthy, who flock to them at all times, and at all seasons, the rich and luxurious for their afternoon drives, the men of business for their earlier ride or walk, as their means and time will permit, the humbler citizens as opportunity offers, the families of all as often as time can be spared. Here on high days and holidays the general public, high and low, luxuriate; they are in fact the very lungs of these vast hives of human beings, for without them a large portion of the population, men, women and children, would never know what a breath of fresh air meant. Here invalids and convalescents feebly recuperating their wasted forces, feel the life-giving influences of a purer atmosphere, and children and infants while sporting and enjoying themselves under the care of their nurses, are inhaling that element so essential to the healthful and vigorous development of their young and immature constitutions. They afford not only the opportunity for breathing freely an improved and purified atmosphere, but the space and incitements to exercise and relaxation, promoting pleasurable reunions, while feasting the eyes with their fresh verdure and regaling with the perfume of flowers and fragrant plants; exhilirating the mind, giving buoyancy to the spirits, and a new and healthy impulse to the circulation.

All the larger cities of the Eastern States have also within the last few years taken steps to provide their populations with large parks, and in no case have the attempts failed, except where certain unscrupulous and dishonest officials, in pursuit of the Almighty Dollar, have made the public weal subservient to their own individual interests.

The City of London and vicinity has about 7,000 acres of parks. There are Hyde Park, Kensington Gardens, Regent's Park, St. James Park, The Green Park, Victoria Park, Greenwich Park, Battersea, besides several others which we do not now recollect; there are also a very large number of squares planted with trees and laid out with lawns and walks.

Dublin has its Phœnix Park, of 2,000 acres.

Paris boasts of the Bois de Boulogne with its 21,000 acres; the gardens at Versailles, of 3,000 acres, and many other smaller parks and public gardens. In fact, Paris has within the last twenty years effected more in parks and other public improvements than any other city on the globe.

Berlin has its Thiergarten, of 300 acres.

Vienna its world renowned Prater, of 1,500 acres.

Munich its English Garden, of 500 acres, and we might mention many more.

On the American Continent we have a noble beginning of improvements of this character, in the Central Park of New York. In 1856 the Legislature of New York authorized the City of New York to acquire those lands for park purposes, which now constitute the Central Park of New York. The Commissioners entrusted with the effecting of the projected improvements, accomplished their task as nobly as the citizens responded to the call for capital; from the commencement to the present time the Commissioners have employed only the very best men in the several departments in the construction of the park, and most of the officials holding position in the park, have held office since 1857. The Commissioners have never permitted politics to interfere in the operation of the work, and never has a committee on public improvements served the people better than the Park Commission of New York. It is to be hoped that San Francisco will be able to record similar facts in regard to those public improvements which are now, or will shortly be, in progress in this city.

The Central Park of New York contains 843 acres, of which 136 are covered by the Croton reservoir. During the years 1859-60-61, more than 86,000 trees were planted out, although some portions of the park grounds were already well timbered. Of those trees set out, over 19,000 were raised in the nursery established by the Park Commissioners, the balance were purchased. The drives laid out are about fifteen miles in length, being on an average thirty-three feet in width. There are also about thirty-five miles of walks, from three-and-a-half feet to sixteen feet in width. The cost of constructing the drives was $25,000 per mile. The quantity of water used for irrigation and other purposes averages two hundred million gallons per year, or about five hundred thousand gallons per day. About $12,000,000 have been expended so far, in the purchase of the land and the improvements. The park is now finished, and is an institution of which New York may justly be proud. We do not at the moment recollect what is the estimated number of visitors to the park per day, but we are certain that over one hundred thousand persons have visited the skating ponds during one day.

In these times when we hear so much about corruption and incompetency of officers appointed or elected to high and responsible positions, it does us good to hear of an instance wherein strict economy, superior judgment, unimpeachable integrity have consummated an undertaking to the satisfaction of all parties.

We shall at some future time refer more particularly to sundry improvements contemplated or already inaugurated in the State of California.

AGRICULTURAL AND HORTICULTURAL WORK FOR DECEMBER.

Farmers and gardeners pretty generally have a busy time during this month. In November we expect rain in sufficient quantities to permit ploughing the fields, and preparing generally for planting.

Although we cannot lay down definite rules for work to be done during this month in California, as they do in the Eastern States and in Europe, on account of the peculiarities of our climate, yet the beginning of the rainy season presses certain work upon the farmer and gardener in every part of the State, which cannot very well be done at any other time. When Horace Bushnell speaks of the incredible anomalies of the California climates, we must admit his correctness, as work which is very properly performed during May in the northern parts of the State, may be effected in January or February in other parts of it.

Fruit and ornamental trees, evergreens and flowering shrubs should be planted as soon as the ground can be prepared for them, as nothing is so beneficial to newly set-out trees, shrubs and vines as a few good showers of rain. Early planting should be an established rule in California.

Lawns and flowerbeds should receive a good top-dressing of manure now. Some object to this on account of the odor and appearance,

but we advise our friends not to be too particular on this point, if they wish to keep their lawns, grassplots and flowerbeds in a condition to produce a new and vigorous growth.

One great objection to using stable-manure, is the many weeds which are produced by it; to obviate this annoyance we would recommend the use of bone and other ashes, which are great and effective fertilizers, and are much cleaner and more easily managed.

This is a very good time to prune all kinds of trees and shrubs; to clip hedges and borders, and to provide plants with proper stakes, so as to keep them in good shape. In cold countries this work is delayed until Spring, as severe frosts seriously injure the newly-cut wood.

Any tree, shrub or flower seed which is sown during this month should be raised under glass, and have the full benefit of a sunny aspect; many varieties even require bottom heat to cause them to germinate freely.

Greenhouses and conservatories should receive plenty of fresh air during the morning and early afternoon, to harden the plants to some extent; we do not like to see plants in the greenhouse or conservatory throwing up spindling shoots as if they were climbers, which they will frequently do, and which is attributable to close confinement, insufficient room, or being placed at too great a distance from the glass roof. Plants under glass require less water during the winter months on account of the moist and cold atmosphere, but when artificial heat is maintained for tropical plants or for forcing purposes, the amount of water to be given must depend chiefly on the nature of the plants themselves. A high temperature generally requires an abundance of moisture.

The old wood of blackberries and raspberries should be pruned out now, if not already done; if this is left until the Spring, a great many fruit-bearing buds, and young suckers not now visible, will be broken off and destroyed.

Strawberry vines should be planted out this month, if a fair crop is expected of them during the coming season.

We would also advise the owners of vineyards to prune their vines now, or as soon as time and circumstances will permit.

Hyacinths may be placed in glasses or pots now, so as to have them in bloom during January and February. We would advise the lovers of this beautiful bulbous root, to place them after planting, in a dark room for a fortnight when they will make strong roots before developing their leaves, this will enable them to send forth a much more vigorous flower-stock than will be obtained under the ordinary treatment.

We had almost forgotten to mention the Dahlia which should now be taken up and stored away in some cool, dark place where the temperature is even and comparatively dry, and where the tubers can rest and recuperate preparatory to being planted out again.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

The third regular meeting of this Society was held at the rooms of the California Academy of Natural Sciences, on Saturday evening, November 26, 1870. President H. N. Bolander in the chair. Minutes of the previous meeting read and approved. Reports of Secretary and Treasurer were then accepted and placed on file. The reports show a cash balance on hand $72.50. On motion, Mr. R. B. Woodward was elected a life member. Nine regular members were also elected, making in all fifty regular members. On motion a committee of five to draw up rules and regulations for the future exhibitions of this Society, was appointed, consisting of the following named gentlemen: R. Turnbull, of Oakland; C. Schuman, of San Francisco; E. L. Reimer, of San Francisco; F. A. Herring, of Oakland, and F. Lueideman, of San Francisco. A communication (directed to the Secretary) was read containing inquiries as to what is meant by "*Sour Soil.*" After some discussion on the subject, the letter was referred back to the Secretary. A new Gladiolus raised from seed by Mr. F. A. Herring was presented, with a

request that the Society give it a name. On motion of Mr. F. A. Miller, it was named the "*Pride of Oakland.*" On motion the Secretary was authorized to have notices of the meetings of this Society printed and mailed to each member, at least one week before the date of each regular meeting. There being no further business before the Society, Professor H. N. Bolander proceeded to deliver a lecture on the Coniferæ of the Pacific Coast.

LECTURE ON THE CONIFERÆ—BY PROF. BOLANDER.

Commencing in the southern part of the State, we meet in her littoral belt, a little north of San Diego, a small species of pine, known to Botanists as *Pinus Torreyana.* I have thus far, not been able to learn its vernacular name.

The trees are small and few in number; they resemble most the so-called Digger Pine (*P. sabiniana*), of our interior valleys. The leaves are in fives and pretty long.

The seeds are about as large as those of *P. Coulterii.* The locality mentioned is the only one known. It has not been tested long enough in our gardens to know what may be expected of it as an ornamental tree. In a practical point of view, it is unimportant.

Going northwards and keeping close to the sea coast, we find at San Simeon Bay, at Monterey and at a place a little south of Pescadero the so-called Monterey-pine (*P. insignis*). The latter named place is its most northern limit. It seems to occur only on the immediate coast, on bituminous slate. Monterey is the oldest sea-port and the oldest point where Botanists began their labors in California. Already, towards the close of last century, it was visited by Menzies, an English Botanist. Our species in question, being variable in the form of its cones, and the form of cones being one of the chief characters relied upon in a botanical description, gave rise to quite a number of synonyms.

In Capt. Beechey's work, we find it figured under the name *P. Sinclarii.* Later it is again described by Loisleur and called *P. Californica.* Don described it even twice, calling it one time *P. radiata*, and another time *P. tuberculata.* The name *P. insignis* given to our species by Douglas, who visited Monterey in 1830 or 1832, is the one now generally used. The name cannot be considered as settled; for according to the laws of nomenclature adopted by Botanists, it must retain its first name: *P. Sinclarii.*

This species attains a height of eighty to one hundred and twenty-five feet, and a thickness of two to four feet. In old age, its shape is very irregular and anything but beautiful. Its cones, three to five in a whorl, are persistent for many years. The leaves are in threes. Its timber is of little value, when better can be had. In dry protected places it is pretty durable; but exposed to the vicissitudes of climate, it perishes soon. The tree, when young, is undoubtedly beautiful. It is extensively found in our gardens and is known to every one as the Monterey-pine.

Mixed with the species, just treated of, we find another two-leaved one, *P. muricata.* The vernacular name, in the southern portion of the State, is Bishop-pine; in the northern, pitch-pine. It occurs near San Luis Obispo at an altitude of three thousand feet; near the Mission La Purissima, where it forms a small grove; near Monterey, as just mentioned, sparingly; near Tomales Bay, scattered over hills, facing the ocean; near Point Arenas; also at the Albion River, extending northward to the Ten Mile River, (Mendocino county). Its cones are in whorls of two to four, persistent for many years. Some trees two and-one-half feet in diameter, had cones on the lower branches, partially overgrown by the bark. In some trees, we find a series of cones of twenty-five to thirty years. This species has not yet found its way into our gardens. When young, it is beautiful and apparently of a quick growth. The old tree is irregular in outline, mostly weather-beaten and unsightly. It attains a height of fifty to eighty feet. Its wood is fit for fuel only.

At the Albion River *P. muricata* is mixed with another two-leaved species of pine, *P. contorta*—Dougl, (*P. Bolanderi*, *Pall*). It at-

tains a height of thirty to fifty feet. On the upper drier portions of the so-called plains of that region, it bears cones when it is about five feet high, and one or two inches thick. The cones, several in a whorl, are also persistent for many years. Its small size and slender, upright branches, its short and densely set bright-green leaves, render it desirable for ornamental purposes. It evidently requires a sandy soil, whether wet or dry; it grows in both as its natural haunts. In the vicinity of Fort Bragg, this species forms a perfect barrier and shelter against wind and drifting sand. Nature here hints at a remedy for us. This species, used with the Monterey-pine and cypress, would protect our city from drifting sand and fix the sand and soil. The people in that section of the country have no vernacular name for it. In any other point the tree is unimportant. It extends along the coast northward up to Alaska. On the Sierras it occurs between three thousand to eleven thousand feet, descending, however, gradually to the north. This gradual descendence of all of our trees on the Sierras towards the north, is readily explained, yes, it is self-evident. On the Sierras, opposite Visalia our Big-trees set in at eight thousand feet altitude; the Mariposa Big-tree grove is found to be six thousand five hundred, and the Calaveras four thousand seven hundred feet above the level of the ocean. On the Sierras, *P. contorta* or twisted-pine, grows on the banks of streams, on wet and moist flats and in the higher portion of the mountains on moraines. Here it attains a height of one hundred and fifty to two hundred feet, and a thickness of three to four feet. Its outline is strictly cylindrical. Its wood is, owing to the frequent storms on the mountains, twisted and therefore hard to split. It is principally used for building log-houses and railway-ties. The vernacular name applied is Tamarack. The application undoubtedly arose from the resemblance in form and habitat this species presents with our eastern Larch (*Larix Americana, Tamarack, Hackmatack*), growing chiefly, if not exclusively, in swamps. The identity of the coast and mountain form is not altogether safely established.

Receding from the coast towards the east, we meet on dry hillsides, a small tree, generally known as *P. tuberculata.* It attains a height of twenty to forty feet, and a thickness of ten to twenty inches. Its outline is conical. The leaves are in threes, and the cones persistent. In gardens it does well, and as an ornamental tree preferable to the Monterey Pine. I have not been able to learn its vernacular name. Being small and unsightly in its natural haunts, farmers never made any use of it, and therefore give it no vernacular name. It occurs on the coast mountains on the road to Santa Cruz, on the Oakland hills, on the mountains around Ukiah, on the Red Mountain, Humboldt county; also near Forest Hill, at Cape Horn (C. P. R. R.,) and further up near Alta in the dry slopes of the cañon of the American river. In most cases this small tree forms a small grove by itself.

After the trees have attained a height of twenty to forty feet, they die and decay.

Continuing our march eastward, we next meet, although sparingly at first, our well-known Yellow Pine (*P. ponderosa*). This species attains a height of one hundred and fifty to two hundred and fifty feet. Its form is cylindrical in outline. The branches are short and generally deflexed. The leaves are in threes and cones deciduous, falling every winter to the ground, after they have opened (about the first of September,) their scales to allow the seeds to be spread by the winds. In gardens it cannot be called an object of great beauty. But on the higher mountains, where it develops its full colossal growth, it is certainly a grand object to behold, and I can well see, why Douglas called it *ponderosa*, the mighty. Generally speaking, its timber is rather inferior, being too coarsely grained, and therefore subject to early decay. It must be mentioned, however, that there is a considerable difference in the quality of the wood in different localities; yes even in trees standing side by side. The timber from Truckee, so-called Truckee Pine, belongs entirely to this

species. The species in question, is one of the most widely distributed trees of the western coast of North America. It grows on all higher and drier points of the coast ranges, and it descends even into their dry gravelly valleys, as is the case a little north of Ukiah, Mendocino county. It occurs on the Sierras from one thousand five hundred to nine thousand feet in great abundance. In fact it is the principal component of that mighty belt of timber, extending from south to north, along the western slope of the Sierras, between two thousand to seven thousand feet, a belt of timber whose equal cannot anywhere else be found. It extends from the Colorado north throughout the Rocky Mountains, and occurs also in the higher mountain ranges of the Great Basin. Its northern limit is unknown. This immense diffusion over so large a territory, exhibiting so many different expositions and climatic differences, must naturally cause a great variation in form and size of the tree and in the quality of its timber. Its very botanical history proves this assertion; for there are few trees that have more synonyms than the one in question. Besides the name above given, there are the following synonyms: *P. Engelmanni*, *P. brachyptera*, *P. Benthanii*, *P. deflexa*, and *P. jeffreyi*. The cones of trees in a dense forest are usually small, while those of isolated trees, standing in alpine meadows or on bare rocky slopes of mountains, or on wide sandy plains (Mono Lake) are from four to six times larger. This larger size of the cone is perhaps due to the intense reaction of the atmosphere, caused by bare rocks, wet meadows and dry sand. Considering the quick radiation of heat in such localities towards evening and shortly after sunset, which cools the air and causes a heavy dew-fall, we may be able to understand this phenomenon.

Ascending the highest points of the Coast Ranges, we meet the well-known Sugar Pine, *P. Lambertiana*. But the Sugar Pine of the Coast Ranges is not that colossal structure of the higher or rather middle Sierras. Its beauty, size and length of cones are inferior. This tree yields an excellent timber, and attains a height of one hundred and fifty to two hundred feet, the outline is cylindrical, the branches are short, dense and much divided into spray. A characteristic exception, make the top-most branches, which spread in a loose irregular manner, almost horizontally. These are the cone-bearing branches, which attract the attention of everybody by their clusters of pendulent cones, fifteen to eighteen inches long. The cones open about September to emit their seeds, and fall then themselves during winter to the ground. This noble tree has its leaves in fives; they are comparatively short and of a glaucous green color. It ranges throughout the entire length of the Sierras, north to the Columbia river, between four thousand to ten thousand feet. I have not yet observed it in any of our gardens. The resinous matter exuding from burnt spots of the trunk, hardens into a whitish mass, sweet as sugar.

Descending into the more easterly valleys of the Coast ranges, we meet a very peculiar pine, the Digger Pine, (*P. Sabinana.*) This species attains the height of forty to sixty feet, and a thickness of two to three feet. Its outline is irregular, the trunk is generally low. Its branches are characterized by a few main leaders and by the paucity of their spray. The foliage is light and quite glaucous green. The leaves are in threes, and the cones persistent, although not to the extent of some other species. The seed is the largest of all our pines. The testa of its seed is very hard and bony. The species occurs in the driest portions of valleys and hillsides, even up to four thousand feet of the Sierras. It forms very seldom small groves. On account of its irregular form, it is not a desirable tree for gardens. Its wood is useless, except for fuel.

In similar localities, we find growing with the Digger-pine, although less frequently, another pine, *P. Coulterii*. This species attains the height of thirty to fifty feet, and a thickness of two to three feet. It has a broad oval outline. The branches and branchlets are thick and clumsy and few in number. The leaves are very long, bright-green and in threes. The cone is the largest produced by our pines. It occurs at pass Tejon, on the Santa Lucia mountains, and Mount Diablo. In our gardens it does well.

[TO BE CONTINUED.]

Editorial Portfolio.

It is but natural, that at the close of a year, we should pass briefly in review the actions and events of that year; and looking backward should draw such lessons from our successes or failures as shall guide us in the future. The year now about to retreat into the dim and misty past, has almost run its course, and is making its final entries in that record, which no regrets, or heart-longings can erase. To us in California, it has been a trying year; not that we have actually lost ground, but rather, that we have seemed to stand still, in what has been heretofore a somewhat rapid race. We have been so long isolated as it were, from the rest of the world, forming to a certain extent a community by ourselves, that we had almost arrived at the conclusion that we were independent of the balance of mankind. The first rude shock to this conceit, came with the completion of the Pacific Railroad, and we found we were no longer an outlying territory of the United States; but in reality an integral and essential part thereof. It was the demolition of what might be called our day-dreams, that has produced the present condition of things. Even now we are not fully awake, and we do not take kindly to the ways and usages of our eastern brethern. California must place herself more upon the same footing as her sister states, before she can advance further in prosperity and material wealth. There must be less desire for the sudden acquisition of riches, and more attention paid to those slow but sure steps that lead to success and fortune.

During the past year our agricultural interests have advanced in a most encouraging manner; still, there is room for more progress in that direction. Every day our people are turning more and more attention to the cultivation of the soil; thus not only increasing their own wealth, but also that of the State. We would say to every young man: "There is health and wealth in the broad valleys and rolling hills of California; only awaiting stout hearts, and ready hands, to yield their treasures to you." One of the great evils of the present day is the tendency of our young men to flock to the cities; building up those at the expense of the country. This is all wrong; and if we could have a grand exodus from all of our large cities, of at least one-half of their inhabitants, we would be all the better for it. San Francisco has at least fifty thousand more inhabitants within her corporate limits than she ought. Just think of the general good to the State, if this same fifty thousand were distributed throughout her agricultural districts? Here they are consumers, there they would become producers.

Along the whole line of the foot-hills the mining interest seems to have new life infused into it, and the yield of gold and silver in the aggregate, is on the increase. This branch of industry will always stand second to agriculture, yet it is one we would do well in fostering.

Manufactures are not in so good a condition as they were at the opening of the year; but those in operation are doing well, and seem to be on a firmer basis. We cannot but think that the strikes, trades unions, etc., of the past two years, have had a damaging effect upon the manufacturing interests of our State. It is an ill advised action, for labor to strike against capital; for capital is, after all, but the accumulation of labor, and without it all labor ceases. Equally indiscreet is a combination of capital against labor; but, fortunately, such a condition of things is to a certain extent impossible. Capital, if unemployed, necessarily comes to loss. It is like a rich fertilizer; if idle, it wastes; while, without it, the land will scarce give bread to the tiller. But distribute it, mingle it with the soil, work it intimately and widely, and after yielding to the laborer ample return for his toil, and making glad the country around, what a rich harvest does it not add to the garner from whence it flowed! When labor and capital stand as antagonists; one saying, "I shan't;" and the other "You shall," they occupy false positions, that confer benefits on neither.

In entering upon the new year, we should endeavor to correct many evils under which

we labor; to turn more attention to the development of the State in its agricultural, mechanical and business pursuits; to draw into closer relations with all parts of our common country; to drop our somewhat provincial ways, and rise to the dignity of the title, which we have claimed and still maintain, that of the Empire State of the Pacific.

WOODWARD'S GARDENS.—An article with the above heading (taken from the *New-York Horticulturist*) appeared in our last number. Several errors in the spelling of botanical names occurred in the original copy, and by some oversight on our part, we have helped to spread these errors still further. We discovered them before the printing of the number was completed, but still too late for our remedial aid. We, however, sent a note to the printer, to be inserted as a last resort, and of course, under the old rule, "of troubles never come singly," our note "disappeared without appearing." We give here the correct "scientific orthography" which "Hortus" so much desires.

On page 9 instead of Chirimoya read *Chironia;* in place of Caladums read *Caladiums*, and replace or by *and*, so as to read Banana *and* the Sago Palm. On page 10 instead of Acacia linearius, read Acacia *linearis;* for Callistema read *Callistemon;* Tobera should be *Tobira;* alwsoniana, *lawsoniana;* veroanica, *veronica;* lauruntine, *laurustinus*, and Metaluca decurrata, *Melaleuca decussata.*

FOREST TREES.—The Illinois State Horticultural Society recommends the following forest trees as shelter from the action of violent winds: Black Walnut; Hickory; Butternut; Wild Cherry; Silver Maple; Basswood (Linden); Honey Locust; Larch; Oaks, (the red, white and bur); Elm; Ash; Chestnut; Lombardy Poplar; Cottonwood; White and Yellow Willows; Sugar Maple; Ash-leaf Maple; Red Mulberry; Catalpa and Silver Poplar. Out of this large number of forest trees we ought to be able to choose several well adapted to California.

"HORTUS."—In reply to "*Hortus*" we would state that the faulty orthography he complains of, is only partly chargeable to us. The mistakes were discovered when it was too late to remedy them. We did the next best thing, and that was to send an explanatory note to the printer; unfortunately this note was, by some mistake, left out. It is our intention to make this journal as near perfect as possible, and we shall always be glad to have any of our readers point out mistakes, which they may find in our columns. "*Hortus*" will find in another part of this department, a correction of the mis-spelled names in the article on "Woodward's Gardens," published in our last number. What he says about the labels, in the Gardens, may be true, and no doubt when attention has been called to the fact, it will be remedied. In regard to the Barnumizing, we fail to see it. We would ask "*Hortus*," if he does not get his twenty-five cents worth, when he visits the Gardens? If the enterprise shown by Mr. Woodward savors of Barnum, all we have to say, is, we very much like the process of *Barnumizing*, and hope he will continue it. As for the Azalea, the writer of the article on its propagation claims success by his mode of treatment. The length of the cuttings is a matter somewhat immaterial. If "*Hortus*" cannot get them of that length, he will have to do with somewhat less: The main point is to take them off when the wood is half ripe.

LETTERS.—We have received a number of encouraging letters from different parts of the State, bearing words of glad import to our editorial ears. We return our thanks for these letters, and shall keep them always before our editorial eyes, as reminders of what is expected of us, and also as incentives to further exertions in the Horticultural and Agricultural cause. Surely if our eyes and ears are engaged in the work, our hearts must be also.

TANGERIN ORANGE.—The best soil for this small tree, is stiff loam, and well-rotted manure.

Tallow Tree.—The "East" has always been a land of marvels to us outside barbarians, and therefore, we are at all times prepared to believe in any of its wonderful stories. The latest one, comes to us in the shape of a *Tallow Tree.* This tree is said to grow in China, where it forms vast forests, and gives rise to a considerable branch of local trade. The fruit of this tree produces seed that are covered with a white, solid, fatty substance which is converted into candles. The tallow, if we might call it such, is said to be of a very fine quality, burning with a clear white flame, without odor. Would it not be well for some of our horticulturists to introduce the tree into California, and set up opposition to the Gas Company? It seems to have just the qualities that their production lacks.

The Mechanics' Institute.—The Managers of this Institute have already commenced preparation for the Eighth Annual Industrial Fair, which is to be held in the Pavilion, commencing on the second Tuesday in August, 1871. A few weeks ago, a committee of three was appointed to prepare circulars for distribution in China, Japan and Australia. Judging by this early action, we should say that the next Exposition will excel any heretofore held in this city.

To Oakland Subscribers.—Mr. W. B. Hardy, west side of Broadway, below Seventh street, in Oakland, will take subscriptions for the California Horticulturist, and receipt for the same.

Omission.—In the report of the "Bay District Horticultural Society" in our last number, we omitted the name of Mr. Meyer, who occupies the position of Treasurer to the Society. We beg friend Meyer's pardon for this oversight, and give him this notice to make up for it.

The microscope reveals the fact that a speck of potato-rot the size of a pin head contains about two hundred ferocious little animals, biting and clawing each other savagely.

Correspondence.

All communications intended for this column must be addressed to the editor of "The California Horticulturist," 418 Kearny street, San Francisco. Correspondents are required to be brief and concise as possible, stating their questions in such a manner, as shall allow of their being answered with satisfaction to the editor, as well as to themselves.

Dear Sir:—Will you assist me on a subject, which as an amateur florist gives me some trouble. Some of my pot plants look sickly; on pointing this out to my gardener, he replies that the soil is *sour*, and that they want repotting; but on asking him what he means by *sour*, he fails to explain, in fact he does not know! I have asked some others, still they do not explain; now as we have a horticultural society, holding regular meetings, will you refer this question to that august body, who must know, and who will doubtless give a scientific reply, and at the same time tell us how to avoid or remedy this evil.

Yours Sir, very respectfully,

Amateur.

Amateur's question has been referred to the Horticultural Society as he desires, for their consideration, and we shall give the result in our next number.

Dear Sir:—Will you inform me if it is expedient to use Guano as a fertilizer in small gardens, if so in what manner, and in what quantities may it be applied?

Also is this the season for sowing Mignonette, and can it be transplanted?

Yours truly,

R. W.

Guano may be used as a fertilizer in small gardens though there are other forms of fertilizers much to be preferred, such as bone-dust, or well-rotted manure. Guano should only be used for this purpose in solution, say about one pound to twenty-five gallons of water. Warm water is the best as it dissolves the fertilizing ingredients more readily than cold.

The solution should be stirred often, and then allowed to stand for one or two days. Only the clear liquid should be used. The best season to plant Mignonette seed is in the spring, though here in San Francisco it may be planted at almost any time of the year, provided there is a sufficient number of warm days after the planting to insure the sprouting of the seed. The plants are easily transplanted when young; but it should be done on a cloudy day, or the plants should be covered for a day or two during the bright sunshine. A very good way to raise Mignonette is to plant the seeds in a pot or box covered with a pane of glass, and give it a warm position. The young plants will appear within ten to twelve days, when the glass may be taken off to harden the plants. When one month old they may be transplanted as above directed.

LARGE HOP YIELD FROM ONE YEAR CUTTINGS.—Mr. Ralph Hamlin, of Alameda county, informs us that he has raised from 2½ acres of hop cuttings, planted last February, 4,600 lbs. of hops of excellent quality. This is about equal to the yield of old vines. He says that he does not train his vines upon poles of any kind, but lets them trail upon the ground like melon vines. He thinks they do better on the ground than when climbing upon poles. His land is heavy alluvial. He cultivates until the vines occupy the ground, then lets them go until picking time.—*Scientific Press.*

WOOL.—The wool crop of Boutwell & Dunlap, of Placer county, is being now received. These gentleman have about 10,000 sheep, the progenitors of which were imported from Missouri in 1854. They are of mixed breed, principally French and Spanish Merino, with infusion of Saxony blood. The latter, it is said, gives finer and more valuable wool, although lighter fleece. The average clip from the flock above mentioned this year was seven and a half pounds. The location of the firm is near the junction of the Central Pacific and California and Oregon Railroad.—"*Encinal.*"

Editorial Gleanings.

MECHANICS' INSTITUTE FAIR.

THE PREMIUMS TO BE PAID FOR THE BEST ESSAYS ON TIMBER, STONE, WOOD, ETC., AT THE EIGHTH INDUSTRIAL FAIR.

At a meeting of the Managers of the Mechanics' Institute, held on Tuesday evening, the following premiums were determined on, to be paid to the successful competitors:

Best General Report on the Manufacturing Interest in California, its present condition and future prospects.—Statistics of Manufactures, showing their Establishment, Progress and present status, Imports, Exports and Consumption.—Causes operating against and for it. $400.

Best Report on the Currents and Tides in the Bay of San Francisco—the effect of building piers—jetties and obstructions therein—the requirements of the harbor and the needs of shipping, and matters of interest in connection therewith, and the water frontage of San Francisco, $250.

Best Report on the Timber of the Pacific Coast, its adaptability to the industries—embracing its application to ship-building, house-building and general construction, with specifications of location, distinctive features, durability, transverse strength, value in San Francisco, etc., $250.

Best Collection of Woods of the Pacific Coast, not less than four samples of each wood—two of these samples to be 12 inches long and two inches square, and two to be 12 inches long, six inches wide and one inch thick—each specimen to be faced on one side, properly classed and labelled with species, transverse strength, specific gravity, green and seasoned, location, dimensions of tree the specimen is from, soil, exposure, special characteristics, etc., $250. Second ditto, $100.

Above specimens to be the property of the Institute.

Best Collection of all kinds of Stone of the Pacific Coast, with Report on location, accessibility, available for building purposes, pavements, slating flags or ornamental work; limes, cements, etc., $250.

Specimens to be the property of the Institute.

Best Street Pavement, adapted for heavy traffic and the climate of San Francisco, accompanied by statement of cost, method of construction, actual tests made, durability, etc., $150.

Best Report on System of Drainage, adapted to the City of San Francisco, its sanitary requirements and its future wants, $200.

Best system for economical transportation of ores, minerals and goods over mountainous places and difficult roads, and its application more particularly to conveying the products of the mines to the mill, $100.

Best system of reclaiming overflowed and tide lands, $100.

For the best Essay and Report on the various modes of treating ores of gold and silver, here and elsewhere, showing the best *practical* results (*i. e.*, the largest percentage of precious metals at the lowest cost), where and how obtained, with a view to pointing out the advantages and defects in the system adopted on this Coast in the management of the mines, above and under ground, $250.

[Note.—In the above Report it is not the object to advance any new theory, but to confine it to practical processes, modes and results, now in existence. It is also desirable that the methods adopted in the reduction of low-grade rock in Australia be presented.]

For the best method of Clearing and Cultivating Tule Lands, $100.

Best Report on economical process of Preserving Timber and Wood from decay, with samples, $100.

Best and most successful attempt to raise Ramie Plants, with statement of cultivation, method, etc., $100.

Best and most successful attempt to raise Beet Root for Sugar, with statement of method of cultivation, and other data in connection therewith, $100.

Same of Tea, $100.

Same of Cotton, $100,

Same of Tobacco, $100

Same of Rice, $100.

Best design for a Cocoonery adapted to climate of California, $50.

Best collection and largest variety of Metals of Pacific Coast, $100.

Best design for iron frame for roof, $100.

The above premiums are to be paid either in cash or plate (engraved) of equal value, at the discretion of the successful competitors. The Board of Managers reserve the right to reject any Report, Essay or Exhibit which may be deemed by the judges to be unworthy.

All communications, papers, reports or essays for premiums, shall be considered the property of the Institute, and may be published by them in any way and time they may deem proper; and any papers which have been read in any public manner whatsoever, or published in any form, shall not be admitted to competition.

The list of premiums is only that which it will require time and attention to prepare, and is not the entire number which will be awarded. Over four hundred premiums are yet to be determined on.—*Call, Nov.* 24.

[In offering the above premiums the Mechanics' Institute has taken a right step in the direction of aiding the development so necessary to our prosperity as a State. We should like to see an addition made to the list, in the shape of a premium for the best essay on a Scientific System of Irrigation in California. This is an imp ortant matter, and one they should by no means overlook.]—Editor.

The "Trophy" Tomato.—Mr. C. H. Whitney has raised about a bushel of this uncommon variety of tomato, this season, on his place near this city. Its chief difference from the ordinary tomato consists in its size, which is simply prodigious. Its flavor is said to be excellent and it is extremely prolific. Twenty seed, which were obtained from New York, cost $5, or 25 cents a piece. Out of the twenty planted singly but two seeds sprouted.—*Vancouver Register.*

To Pickle Nasturtiums.—Gather the nasturtium berries soon after the blossoms are gone off, put them in cold salt and water; change the water once a day for three days. Make some pickle of white wine vinegar, mace, nutmeg, pepper-corns, salt, shalots, and horse-radish. It requires to be made strong, as it is not to be boiled. When the berries are well drained put them into a jar and pour the pickle over them.

THE

CALIFORNIA HORTICULTURIST

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FLOWERING BULBS.

The present is the time of year when seedsmen and florists advertise their stock of flowering bulbs—we believe but few of our readers have any idea how extensive a trade is carried on in the East and in Europe, in bulbs of every description. It is a notable fact, that in former years better and more extensive collections of flowering bulbs, were offered for sale in our California markets, than have been within these last two years. In explanation of this, our importers of bulbs assert that they actually lost money on their importations, so limited were the sales they made. If this is a test, to what a low ebb must the Californian taste for flowers have fallen; notwithstanding the admiration lavished whenever our florists exhibit a well developed Hyacinth or Lily, in their show windows.

A year since, Mr. Schuman, of Woodward's Gardens, exhibited some splendid specimens of Hyacinths, grown to perfection in his greenhouse, they presented a beautiful appearance and visitors admired them more than any other plants in his valuable collection; at our late Horticultural fair some beautiful specimens of the Lilium Auratum were exhibited by Wm. Meyer & Co. and others, and were admired by everybody. When Mr. Reimer succeeded last spring in bringing the Lily of the Valley into full bloom, amateurs were agreeably surprised at their exquisite beauty and fragrance. Whoever had the opportunity of seeing the Bouquet, or Liliputian Dahlias which Mr. Herring of Oakland imported and brought into bloom, during the last summer expressed a determination to cultivate them. When the tables of our floral establishments were loaded down with the flowers of the Amaryllis, they were considered by all who saw them most beautiful. The Gladiolus exhibited at our late fair, produced quite a sensation among the visitors. Even when the Chinamen pass through the streets with the Narcissus in full flower, supported by a dish full of gravel, they are eagerly purchased by admirers as worthy specimens for parlor windows. Yet despite of all this admiration, when the proper season arrives when all these bulbs should be planted, and when they can be procured at every seed store, *nobody wants them!* How is this to be accounted for? If bulbous roots were difficult to manage so as to bring them to perfection, or if the prices asked for them were extravagant, there might be some excuse, but it is an indisputable fact that no class of plants are more easily cultivated, or require less care; there is less trouble with them than with any other class of flowers, and with very few exceptions, the treatment of bulbs is very plain and simple indeed. What then can be the reasons why they are not sought for, and cultivated as ornaments to our gardens and parlor windows, at a season when scarcely anything else is in flower. We believe it to be thoughtlessness

and neglect on the part of those who most admire them when in bloom—but fail to acquire them at the proper season—and want of taste in those who see them when in bloom, but fail to admire them—and let us here add we think it want of taste, ignorance, and carelessness in those gardeners, and florists, who, professing to know more than they really do, fail to impress on their own particular patrons, who rely on their advice, and on the flower-loving public generally, the peculiar beauty and exquisite loveliness of flowering bulbs.

To facilitate the cultivation of this estimable class of plants, so well adapted for outdoor and indoor, for pot, and open ground cultivation, we will give our readers from time to time a description, with the mode of treatment, of the more popular varieties of flowering bulbs, hoping thereby to induce an increased demand, and thus afford some encouragement to the importer, and more especially to the cultivator for sale—who, like Mr. Nolan of Oakland, has paid special attention to bulbs during the last ten years, but has not realized 10 per cent of the original cost of purchasing and importing them.

We have mentioned, contrary to our adopted policy, several firms who cultivate bulbs, in order to establish the fact that they have been offered for sale, and must also suggest that unless the public exhibit more taste in improving their flower beds and parlor windows during the different seasons, the dealers will certainly cease to import or cultivate bulbs, but will supply us with an increased quantity of pines, and cypress, or daisies and hollyhocks.

One of the most popular and well-known classes of bulbous roots is that of the

HYACINTHS.

They are cultivated to a greater extent here than any other flowering bulbs. The majority of those supplied by the dealers, are imported annually from Holland, where they have been more extensively cultivated than anywhere else since the 16th century. The Hyacinth can be grown with success in almost any soil, except in heavy clay; even our sand is adapted to its cultivation if mixed with old rotten cow manure. Hyacinths are perfectly hardy, and do not require any protection in any part of California. They can be cultivated in the open ground, in pots, under glass, or in hyacinth glasses, made for that purpose, and filled with water.

If grown in the open ground, they may be planted in California at almost any time from November until April. The ground should be well worked and manured, but special care must be taken not to permit the bulbs to come into contact with the manure, which may cause them to rot—they should be planted in a warm situation and nothing further needs to be done, except to keep the ground free from weeds. They will produce their flowers early in spring. When the leaves have turned yellow, the roots should be taken up again and allowed to dry, after which they may be cleaned and stored away in a dry cool place, until the time for planting has again arrived. Hyacinths will produce much better flowers under such treatment, than if permitted to remain in the ground for years.

Hyacinths are also well adapted for pot-culture. For this purpose, care should be taken to select large round bulbs, they can be easily forced, either in the house or under glass, and it is advisable by progressive planting, to have successive sets coming into bloom as the earlier ones cease flowering. In a moderately warm room the Hyacinths will develop their flowers in from three to four weeks. If flower pots deeper than usual can be obtained, they are much to be preferred.

The soil for pot-culture should be ½ of old rotten cow manure, ¼ of strong sand, and ¼ good light garden loam. The bulbs should be planted so as to show their necks above the soil; after planting they should be well watered, and placed in a cool dark room for 10 or 12 days, to permit them to put forth their roots. This will enable them after being transferred into a warm light room, to send up more vigorous stems and trusses of buds, and flowers, than can be obtained by permitting roots and leaves to develop themselves simul-

taneously. Hyacinths have been forced into bloom in 16 days—but under ordinary treatment they will require about 30 days.

The setting of Hyacinth bulbs in glasses filled with water, is going out of practice in Europe, for the simple reason that they cannot be forced so well in this way; another objection is the necessity for changing the water at least every other day, at the same time observing that the fresh water should be of about the same temperature, as that in which the plant has been growing. Single Hyacinths are better adapted for glasses than double ones. After flowering, the bulbs should be treated in the same manner as directed for open ground culture.

Hyacinths are both single and double, and for our part we admire one as much as the other, the varieties are too numerous to particularize. The leading colors are blue of all possible shades, white, yellow, and red of divers tints. The difference between single and double Hyacinths is sometimes hardly perceptible. The finest varieties are all named, and although we may pay a little higher price for them, we know exactly what we purchase.

This beautiful class of flowering bulbs deserves a place in every collection of plants for the garden, the green-house, or the parlor-window. If kept in a shady place after the flowers have developed themselves, they will continue in bloom for a long time and will well repay for the little labor bestowed in their cultivation, and for the small expense in procuring them.

If cultivated in the open ground, a sunny place should be allotted them, either by themselves or mixed with other flowering bulbs, where after their flowering season, their places may be filled by annuals, or other bedding plants as Lobelia, Nemophila, Pansies, Asters, Balsams, Flox Drummondii, Zinnia, Cineraria, etc., so as to keep up the floral display.

Our climate is favorable to the cultivation of the Hyacinth, and we hope that it will become a favorite both with our gardeners and amateurs, not only here in San Francisco and its vicinity, but everywhere throughout the Pacific coast; there is no place in California where the Hyacinth will not grow to perfection.

THE TULIP—(*Tulipa*).

Next to the Hyacinth the Tulip is the most popular of flowering bulbs, but although its cultivation is fully as easy as that of the former, the success has not been so encouraging, especially with us in California. Many have complained to us that they have met with disappointment in growing the Tulip—we will endeavor to point out the proper mode of treatment, but fear that its cultivation here will be attended with difficulties not easily overcome.

Two years since a gentleman residing in this city, imported a parcel of Holland bulbs consisting chiefly of Hyacinths, Tulips, and Anemones. He prepared a bed for them in a sunny exposure, and added sufficient of old cow-manure—to make it half manure, half soil. In this bed so prepared, he caused the Hyacinths and Tulips to be planted; we called his attention to the fact that Tulips do not require so much manure, and we expressed fear for his ultimate success. We have never seen a finer lot of Hyacinths in bloom in California than his, but the Tulips were a complete failure. This example, vindicating as it does, an old established rule, that "the Tulip will not thrive well in heavily manured soil, and even if it does the flowers will exhibit much inferiority in the various shades of color," should go far towards settling this point. Another mistake is often practiced here, that of planting Tulips too near the surface when they should be planted from five to six inches deep; and still another objection to the mode of treatment they usually receive in spring-planting, when they should be set in the fall of the year.

The rules for the cultivation of Tulips are: After procuring healthy bulbs, plant them without delay in deep loose soil, neither too sandy nor too clayey, selecting a sunny exposure, more so if possible than for the Hyacinth; they can do with less moisture, too much of which promotes decay. If under this treatment the Tulip will not thrive, we are certain that either the soil or the climate of Califor-

nia is uncongenial with this bulb. As for our own experience we have grown splendid Tulips in the northern part of the State, where the winters are colder, and the summers warmer, and the conclusion is forced on us that the climate of San Francisco is not well adapted to the cultivation of Tulips. However we are under the impression that with the above treatment, and the influence of all the sunshine at our disposal, the Tulip can be brought into bloom.

The varieties of Tulips are many, and they are divided into several classes in relation to their time of flowering; they generally come into bloom later than the Hyacinths, and are divided into early, medium, and late-flowering. Tulips are also single and double. The single Tulips are preferred, being handsomer in shape, and much finer in color. The flowering season of the different classes of Tulips continues for about eight weeks, after which the leaves begin to decay, when we subject them to the same mode of treatment which the Hyacinth bulbs receive. Although Tulips can be grown in pots, and forced as the Hyacinths, we prefer to cultivate them in the open ground if possible; but if pot-culture is resorted to, the early varieties are more generally used for that purpose.

In regard to varieties in character, we have *Bizzare Tulips*, single and having a yellow and brown ground splashed with crimson or purple. The *Bybloom* (*Bybloomen*) *Tulips*, single and white or yellow ground, with black, lilac, or purple shades chiefly; and the *Rose Tulips*, variegated with pink, crimson, or scarlet. There are other classifications, but we omit them as impracticable for our purposes.

The Hyacinth has been proclaimed the Queen of spring flowers; we feel fully justified in designating the Tulip the King of early-flowers. Only those who have seen them in all their glory can fully appreciate their value.

Tulips can be purchased in our seed stores and floral establishments at prices much less than those of Hyacinths, and a few dollars will procure a very fair assortment to commence with. The Tulip does not generally arrive here in as good condition as the Hyacinths, and it requires a little more attention in selecting sound bulbs. If once attacked by the dry rot they cannot be easily cured.

We desire very much to be able to record instances where parties in California have met with success in this cultivation, that we may encourage those who have sustained repeated disappointments. Any communications in this relation will therefore be highly esteemed.

GLIMPSES INTO THE WORLD OF PLANTS.

TRANSLATED FROM THE GERMAN.

Long ere the appearance of what we designate animal life, plants inhabited and dominated this world. The roar and dashing of the waves of the mighty ocean, the hurtling of the trees clashed wildly together by terrific storms, already resounded, but were as yet unheard by mankind. Titanic tempests were raging and by hurling forests upon forests, wrought unheeded those immense coal deposits for the approaching human race.

Already then the world of plants, for countless thousands of years were in two-fold action, busily subserving the requirements of the future Lord of Creation. Living, they purified the air of the superabundant carbon so pernicious to animal life; dying, they formed that vast and unappreciable treasure, by whose instrumentality we arrived at the assured domination over the world.

The destination of some of these plants, however, was already to a higher and nobler being, even to develop themselves into animal life and to sustain it. We instance the Zoophyte, the so-called animal plant, which, existing on the dim verge of both eras, belongs to both. The Crinoidea, again, which, in her incipient state, takes root as a lily on the bottom of the ocean, but as soon as her destined time arrives, tears herself from the mother seat, and swims away endowed with volition and animal character.

Thus were formed thousands of bridges, over which the animated world, starting from

the world of stone, and passing through another metamorphosis, to the animal world, which we at present—mayhap incorrectly—designate the final act of creation. The plant incident to its transformation inherits from the stone its stability, its fixedness, yet exhibits at the same time as precursor of the animal, such marvellous qualities, that the observer regards them with astonishment, mingled with awe; he stands before these enigmas of nature, as before a revealed wonder, a noble mystery; —he comprehends why the polytheist attributed animal life and passions to the tree, and sensation to the plant which he personified as hamadryad;—where the deep thinking Greek saw a nymphean tree, there science of to-day recognizes only the living plant.

But how far are we even now at our present time from a just appreciation of this most interesting of studies. Who can contemplate all the changes through which the cobble stone, on which he steps, has passed!—an ancient witness of the days, when mighty glaciers covered all; through those dim and misty ages, when by the terrific agency of deluges and uprisings of oceans, long since disappeared, they received amid the mighty turmoil their rounded forms, ere they submitted quietly to be used for the purposes of to-day.

Do we give a thought to the marvellous processes in operation behind the bark of a tree, when we idly use it for cutting into it a heart, and two letters. When thoughtlessly we pluck a violet to enjoy its perfume, do we remember that we stand in the presence of the spring of love, of incomprehensible plant natures. Even in the great book of nature, which appears to us filled with northern lights, meteors and flaming worlds, the quiet little plant is not one of her most uninteresting leaves.

Novalis called plants and animals the dreams of nature—and the production of mankind her awakening. This is expressed more beautifully than truly. Dreams are remembrances and mixed up metamorphosises;—the plants as forerunners of animal life have nothing confused, everything is positive and full of harmony. The plant breathes, eats, drinks, and sleeps; it loves, and suffers, it sometimes travels, it flies, borne by the storm, with the birds of passage to a southern clime during the cold season, to return to us in the spring. There are plants, who have an uncontrollable desire for liberty, and which dig for themselves passages beneath the walls, to obtain their freedom. The plant breathes—it inhales the deadly carbonic acid gas, so fatal to animal life, and gives us in return the oxygen, just the reverse of men and animals. Plants are therefore a most necessary element in the household of nature, as they regulate the balance between the different parts of our atmosphere.

The population of this earth—estimated at twelve hundred millions—uses every year 160,000 millions of cubic meters of oxygen, and exhales just as much carbonic acid gas, which is quickly absorbed by the plants. This proves, that the planting of a single tree is a benefit; and why life in the country is more healthy, than in cities. The culture of forests is therefore not only a gain to the lumber dealers, but is an advantage to the whole country.

Plants subsist on water, carbon, ammonia, phosphorus, and sulphur. The organs which conduct the nourishment have therefore partly to go into the ground, and partly to be in the open air. For these reasons the plant makes roots and branches, on the latter grow the leaves, which are the lungs of the plants. The sleep of most plants is at the same time with the animal kingdom, that is during the night; although there are animals and also plants, which sleep during the day. In cities which are lit up with gas, the trees next to the lamps die off for want of sleep. Some of them resemble our aristocracy, who turn the night into day; they awake about noon or even sleep on, should the weather be bad, or rain threatening.

It would not be at all difficult for our lady friend readers to arrange in their gardens a flower clock, not perhaps to miss their dinner at the right time like poor Linné, who had

no watch; but to study the plants and be able to regulate their watches to within a few minutes of the correct time. What pleasure would it not be to discover something new in this line? To do this, we propose a kind of alley. Twenty-four stands made of marble or wood, according to the wealth of our readers, representing the hours, and on each of these the flowers carefully arranged according to their habit of going to sleep and waking up. Between each of the above stands, we might have twelve smaller ones, also to receive flowers, to represent each intervening period of five minutes.

We give here the names of a few plants easy to be procured: At one o'clock after midnight, therefore in the morning, the Goosethistle wakes up; between

2–3	o'clock: the	Milkroot, (*Tragopogon*).
3–4	" A. M. "	Anemone.
4–5	" "	Lionstooth, (*Lenotis*).
5–6	" "	Sea-lily, (*Scilla*).
6–7	" "	Water-lily (*Nymphæa*).
7–8	" "	Venus looking-glass.
8–9	" "	Field Azalea.
9–10	" "	American Malva.
10–11	" "	Snakeroot.
12	" noon "	Lychnis viscaria wakes up, the Rabbitkehl falls asleep.
12–1	" P. M. "	Portulacca closes itself.
1–2	" "	Malva, Lachnis goes to sleep.
2–3	" "	Myosotis, (Forget-me-not), and Lungweed, (*Pulmonaria*) falls asleep.
3–5	" "	Field Azalea goes to sleep.
5–6	" "	Sea-lily goes to sleep.
7	" "	Hesperis wakes up.
8	" "	Cereus grandiflorus wakes up, but its time of blooming is not only seldom, but it lasts but a few hours; it soon fades, having filled the air with a powerful perfume, somewhat resembling vanilla. At nine o'clock the night-flower (Nyktanthes) wakes up, and at ten o'clock the Convolvulus Rubra.

How many gaps are here still to be filled?—How imperfect is still our knowledge of the sleep of plants.—How much have we still to observe, and to study, how much dependent on bright or dark days, on pleasant or cold weather.—What influence have natural phenomena, northern lights, storms, and the eclipses of the sun. Why should ladies not be able to make discoveries in botany? The plant has the sense of feeling and tasting, for how carefully it selects the most proper nourishments. She has weapons for defence, but not to attack, and though she may rob our sheep of many a small tuft of wool, she does not do it for a selfish purpose, but for the benefit of her darling singing birds, for their nests. In this, she is like Saint Crispinus, who stole leather, to make shoes for the poor.

There are, however, also plants, which permit no fooling; dangerous, unapproachable natures. The nettles shoot small poisoned arrows into the hand which dares to come too near. Who of us, did they not make cry in our childhood? Who has not read of the bohun Upas, the poison tree? Who at least did not see the "awful" pretty Manzanilla in the 5th act of L'Africaine? Who does not know, that there are poisonous mushrooms, and the deadly nightshade? But there are few, who know, that we have in our gardens and all around in the country the very dangerous Rhus toxicodendron, (poisonous sumach,) and that it would be just as foolhardy to break off a twig, as to feel the tooth of a rattlesnake.

The following has come under our observation: In the year 1832, Mr. Fallermaier, the head gardener of the botanical gardens in St. Petersburg, cut a branch off the Rhus toxicodendron; the sharp end snapped against his hand, and broke the skin but a very little. After two hours his arm swelled up enormously, red lines on bluish ground denoted an inflammation of the lymphatics; the whole left side of his body then commenced to swell, and a general poisoning of the blood, with delirium, as in typhus. Although the patient got well again, it was only after weeks of careful nursing and the particular attention of the most eminent physicians, and even months afterwards his face showed that yellow tint, and that unhealthy bloatedness, which we observe in the highest degrees of the scorbute and the yellow fever.

Notwithstanding our great love for plants, we cannot but allow, that there are many reprobates among them, like the water-plague (*wasser-pest*) and the disagreeable wild mustard, the severe affliction of the farmer; but still the virtues predominate by far. R. W.

[TO BE CONTINUED.]

HEDGES.

It is somewhat difficult to comprehend, why on the Pacific Coast so little attention is paid to the planting of hedges, when their importance as an ornament, and their usefulness, can not be over-estimated. We wish to call renewed attention to this matter, and in so doing will speak first of *hedges for ornament*, such as may be planted in and around ornamental grounds.

Some expense and care are necessary in raising hedges of this description, but these are amply repaid by their additional embellishment of our gardens. The following varieties of shrubs make good ornamental hedges. Laurestinus, Euonymus, Privet, Polygala, Cratœgus, Veronica, etc. In California the three first named have been used more extensively on account of their cheapness, while the others, not being raised so extensively, command a much higher price.

The Laurestinus makes a very good hedge for any locality in this country. It is perfectly hardy, grows rapidly, uniform and dense; it may be clipped into any shape and at any time. The foliage is of a dark green color, and the flowers are white; it blossoms with us during the entire year, and is therefore very desirable. Plants one foot in height or even less, may be planted one foot apart, and in ordinary soil a well framed hedge may be raised in two years.

The Euonymus, (of which there are several varieties distinguished by the color of the foliage) is also well adapted for ornamental hedges on account of its elegant foliage. It bears close pruning and is of fast and uniform growth. Many Euonymus hedges in San Francisco, as well as in other places, have ceased to be ornamental on account of their becoming bare near the ground. This however, is attributable to mismanagement. The Euonymus requires a strong soil to make it thrive well; and to cause it to grow as dense near the ground as at the top, we strongly recommend clipping the sides of hedges so as to slope upward, thus exposing every part to the air and light. It is an error to cut hedges in a square form, particularly the Euonymus hedge, as the lower stems will soon become deficient in foliage and covered with insects. If cut with sloping sides pointed on top we venture to assert that the Euonymus will give every satisfaction as a hedge plant. Our nurserymen have neglected to raise the Euonymus extensively during the last two years, the sale having become very limited. This is attributable to the fact that hedges and specimens of this plant set out three or four years since have failed to retain their good appearance, this failure can be easily remedied by not allowing the specimen plants to become top-heavy and by keeping the hedges sloped instead of square. We are much in favor of Euonymus hedges if properly treated.

The Privet is also a favorite hedge plant in the East and in Europe, but here it has not been extensively cultivated. We have now so many beautiful varieties of shrubs well adapted for hedges, that we cannot advocate the planting of the Privet to any great extent. It does very well when nothing better is at hand, but here we can do better with other varieties.

The Polygala is a fine flowering shrub, and certainly makes a beautiful hedge; the only objection is the high price which it still commands. It is not so easily raised as the preceding varieties, and therefore the stock is very readily sold at a good price; however, we predict that the Polygala will always be in favor with our people, and as a flowering ornamental hedge-plant it has no superior. The Polygala is a hardy evergreen which flowers throughout the year; it grows very rapidly, and can be pruned at any time; the color of the foliage is a light green, and the flowers are purple.

The Cratœgus is used very extensively for hedges in Europe and is well adapted for the purpose. We do not know any hedges of this kind here—in fact the number of plants cultivated here is very limited.

The Veronica makes a handsome hedge-plant. We admire its spikes of blue flowers with its dark green leaves. The variegated leaved Veronica is also well adapted for hedges, and would be an embellishment to any ornamental

grounds. The Veronica, however, would most usefully serve as a screen or shelter if allowed to develop itself with but little check. We noticed some time since, a very strong hedge of this shrub from twelve to fifteen feet in height, answering every purpose as a screen, at the nursery of Mr. Patterson, on the San Bruno road.

Besides the shrubs above particularized, other plants may be used with advantage in hedges, although they may not be hedge-plants. Roses of certain varieties form an elegant hedge, but require a wooden frame for support. If an ornamental hedge of about two feet in height is desired, we can recommend the Diosma Alba. This beautiful shrub, with its graceful foliage and fragrant little white flowers, will form a most exquisite low ornamental hedge.

Ornamental hedges should be used only where they answer certain purposes, for instance between the flower garden and the drive, to divide the ornamental grounds from the kitchen garden, to border the main walk from the entrance gate to the front of the house, in fact whenever a boundary or division line may be properly established, or where protection of some kind may be required.

An altogether different purpose is sought in establishing farm-hedges, or hedges which are intended to form a line of protection from cattle or from strong winds. Different classes of plants are used for these purposes; the Osage-Orange, Irish Whin, (*Ulex europæus*) Honey Locust, Hemlock etc.

The Osage-Orange has been for some time the most esteemed hedge-plant for this purpose both here and in the East. It is exceedingly well adapted for this use, and is highly ornamental. We do not know what success those met with who planted the seed in the hedge-rows; doubtless only a small portion of the seed came up; but where the seeds were sown in nursery-rows, and the young plants were transplanted in the fall of the year, our farmers had but very little trouble to achieve success. The young plants should be set out at from eight to twelve inches apart, and the tops should be cut back. If the plants are of different sizes, it is advisable to assort them and to plant those similar in size together. After planting we advise a good top-dressing of manure or straw to keep the ground moist. As the plants grow up the tops should be pinched off from time to time to establish an even growth and to force out lateral branches. However, to secure a very dense hedge, it may be as well to let the plants have their own way the first year and then to cut them down to the ground. This treatment will start out a number of shoots from the ground the second year and give the hedge naturally a pyramidical form. Following up this treatment, the hedge may be cut back to two and a half feet at the commencement of the third season, and so on until a compact and strong hedge is raised which will serve every purpose.

The Whin (*Ulex europæus*) is very extensively used for hedges in England, and is of rapid growth. A very good hedge, (or rather screen) at Mr. Hudson's place at Bay View, shows how well the Whin is adapted for this country. Mr. Hudson's screen was planted only a few years since, and is now impenetrable both to man and beast. The Whin is an evergreen, bearing a yellow flower, and will grow in almost any soil. It is easily raised from seed, which may be sown in the hedge-rows, or it may be sown in nursery-rows and and afterwards be transplanted. We consider it fully equal if not superior to the Osage-Orange as a screen.

The Honey-Locust also forms a strong hedge, but it has not been, to our knowledge, introduced into California yet. Not being an evergreen, it will be less ornamental than the Osage-Orange or the Whin.

The Hemlock is an evergreen which certainly does not figure as a hedge-plant. It is used for that purpose to a great extent around Philadelphia and other Eastern cities. The "Gardener's Monthly" says: "Some think as the Hemlock is a large forest timber tree, it cannot be kept down as a hedge-plant, but summer-pruning will keep the strongest tree in a dwarf condition for a great number of years; the pruning has to be done just after

the young growth pushes out. It is very important that the hedge should be cut with sloping sides so that every part of the surface shall have the full benefit of the light. No hedge with the upright sides or square top will keep thick at the bottom long."

It will be a long time before Hemlock hedges will be cultivated in California, as the plants command too high a price; but if the above argument holds good in regard to the Hemlock, we see no reason why we should not make hedges of Cypress and Acacias, which are more plentiful here, are well adapted to our climate, and perhaps superior as an ornament.

Lumber is high in California, and the labor of putting up fences amounts to more than the setting out of small trees and shrubs. Wooden fences will not last many years, and must be often repaired. Why should our farmers neglect the more extensive introduction of hedges. A few dollars' worth of seed will raise a great many plants, and we are convinced that hedges will be far cheaper in the end than wooden fences; they will form better protection, and are certainly more ornamental

A Hint to California.—In August, 1869, a company of five gentlemen at Salsbury, Md., bought a wholly unproductive bog, irrigated it with water from the river, and cut it up by intersecting ditches into squares of 150 feet each. The turf was then broken and turned; this was covered by six inches of sand, and then the vines were planted. About two acres were planted last season. Six more acres have been prepared this season, making now about eight acres. The swamp is now bearing enormous crops of cranberries, and one of the owners recently sold for $1,000 a share which has cost him in all less than $700.

To make New Rope Pliable.—Considerable difficulty is sometimes experienced in handling new rope on account of its stiffness. This is especially the case when it is wanted for halter and cattle ties. Every farmer is aware how inconvenient a new stiff rope halter is to put on and tie up a horse with. And new ropes for tying cattle are frequently unsafe, for the reason that they are not pliable enough to knot securely. All this can be remedied and new rope made as limber and soft at once as after a year's constant use, by simply boiling it for two hours in water. Then hang it up in a warm room and let it dry out thoroughly. It retains its stiffness until dry, when it becomes perfectly pliable.

BONE FERTILIZERS.

Bones are almost completely insoluble in water—practically so. When very finely divided, as in fine bone dust, a small amount is dissolved by the water of the soil containing carbonic acid, but the quantity is small, and the time taken to do it is great. For the useful effects of bones, therefore, the farmer must dissolve them, and sulphuric acid is alone the most powerful and economical means for that end. It depends on the different form of bone which the farmer operates on as to how much acid will be required. The sulphuric acid used should be of considerable strength, and the farmer should ask for it of the specific gravity of 1.70 or marking 140° Twaddell. When the acid reaches the bones, the mass effervesces, boils up, and becomes warm, the sulphuric acid taking away two-thirds of the lime of the bone from the phosphoric acid, which remains united with the other third, forming a superphosphate, biphosphate or mono-calcic phosphate, which substance is perfectly soluble in water, and is called soluble phosphate. The sulphuric acid uniting with the lime forms a sulphate of lime, (gypsum, or plaster). So that in every heap in which a superphosphate has been made there is always an amount of sulphate of lime (plaster) formed, and the plaster forms the greater portion of the whole mass.

The bones which are used for making superphosphates by manufacturers, or which may be had by farmers, are found in the following conditions; 1. Bone dust or ground bone. 2. Boiled or steamed bones. 3. Bone ash of sugar refineries.

1. *Bone dust.*—Before the bones are crushed they are now generally boiled for the sake of the fat, which is sold to the soap boiler. It is of no value as a manurial agent, but is rather deleterious, coating the bone and protecting it from the action of the acid, and it would be advisable for the farmer when possible to boil the bones.

2. *Boiled or steamed bones.*—Bones are steamed for the purpose of removing gelatine or animal

matter of the bone for the purpose of converting it into glue. The effect of steaming on bone is therefore to deprive it of some of its organic matter, but it must not be supposed that the whole of the organic matter is removed; a considerable quantity remains, and some ammonia can always be found in such bones when decomposing. A reference to the analysis shows that not more than five or six per cent. of organic matter has been extracted from the bone.

3. *Bone ash.*—If bones are burned in contact with the air, the greater part of the carbon is driven off with the other combustible parts of the bone. To avoid this result, which would render the ash worthless for the use of the sugar refiner, the bones are charred in heated iron cylinders, out of contact with the air, by which only a portion of the animal matter is burned off. A large amount of finely-divided charcoal remains, mixed with the bone earth, giving the valuable properties to the bone ash. It has become a great deodorizer and antiseptic, and capable of condensing gases with its pores, by which means it retains both the ammonia and nitrogen of the soil and the manure. The black color of the bone ash is due to this charcoal.

	(Voelcker.)		(Anderson.)
	Bone dust.	Steamed bone.	Bone ash.
Moisture	12.06	8.06	6.10
Organic matter*	31.12	25.45	5.05
Phosphates of lime and magnesia, (bone earth)	49.54	60.48	79.20
Carbonate of lime	4.99	3.25	4.05
Magnesia and alkaline salts, (chiefly common salt	1.91	.43	.15
Sand	.38	2.33	5.45
Total	100.00	100.00	100.00
* Containing nitrogen	3.69	1.84	
Equal to ammonia	4.49	2.24	

One hundred pounds of bones, ground, crushed, or dust, (not burned), require forty pounds of sulphuric acid, (vitriol). This quantity, if acting solely on the bone phosphate, would remove two-thirds of its lime; but, as there is always some carbonate of lime present, this is first acted on by the acid, and thus some of the phosphate escapes decomposition, and remains in the mass as insoluble phosphate; hence in the mass there are always three constituents, the amount of which it is desirable the farmer should know, viz: the soluble phosphate, (mono-calcic phosphate,) the insoluble phosphate of lime, (undissolved bone earth), and the sulphate of lime. These are the three important substances in a superphosphate, for although ammonia may be potentially present if raw bones have been used, yet a superphosphate is not made or used for the sake of the ammonia; and when bone ash or burnt bone is used no ammonia is required.

If calcined bones, or the bone ash of the sugar-house, be the material used, every 100 pounds will require 87½ pounds of vitriol; when these have fully acted on each other the mass would give: superphosphate of lime, 26 pounds; gypsum, 66 pounds; sulphate of magnesia, 1½ pounds; soda, 2¾ pounds, and the balance of the 187½ pounds would be water and undissolved bone earth. If the farmer uses steamed bones, a quantity of vitriol intermediate between the two proportions named will be needed, say 66 pounds.

The usual mode of making the fertilizer is to select a good wooden floor of a barn, well covered overhead, or to make a box floor of thick plank, laid tight. On this first throw the bones. If not in dust, it would be well to sift the bones, and place the coarser part on this floor, putting the finer portion aside for mixing in afterwards. By this means the rough bone will come in contact with the strong acid first and be more effectually divided, while the finer parts can then be added to dry up.

No metal (except lead) should be used on the floor, or where the acid can reach. Water equal to one-fourth or one-sixth the weight of bone is then to be poured on the bone, well stirred in with a spade, and left for two or three days to heat and ferment; it would be well to use the water boiling. Then add the sulphuric acid, mixing well with a wooden spade or board; the mass effervesces or boils; stir twice a day well for two days, so as to turn the whole mass over; let it stand for two or

three days to dry; add the fine bone and mix well. If not dry, use some absorbing substance, as sawdust, dry peat, or dry earth, in small quantities, and mix well. *Do not use for this purpose, lime, ashes, or marl*, as they would destroy the superphosphate and spoil the whole work. Made in this way from bone ash, this fertilizer will yield 30 per cent. of soluble salts, of which 26 per cent. is superphosphate of lime. The manufacturer will say that there is 35 to 37 per cent. of superphosphate present, but he always over-estimates; indeed, 26 per cent. of soluble superphosphates is *more* than any farmer wants; it is too soluble, and will pass out of his ground to soon, especially in wet weather; 12 to 15 per cent. is a better proportion for the farmer, for then he has a proportionally larger amount of insoluble bone phosphate in store for future use in the soil. On this account it is better for the farmer to use raw or steamed bones than bone ash; he has a sufficient, though a smaller, quantity of superphosphate present.

This fertilizer will not suffer from exposure to air, but it must be protected from rain or wet; it ought to be barreled up when not used immediately. This fertilizer, made as directed, will be of a whitish color if made from raw or steamed bone, and gray black if made from bone-black of the refinery; but the color of a superphosphate is of no consequence, and no test of its quality; neither is its smell; it ought to have no smell, or a faint acid odor, if any. One ton of a manure made by the farmer as directed is worth two purchased in the market.

A good manure may be made from bones without forming a superphosphate, by dissolving the animal matter of the bone by means of alkaline leys, and thus freeing the bone earth, which is then in excessively fine particles fit to be dissolved in the waters in the soil. Many recipes have been given for this. Dr. Nichols in his Boston Journal of Chemistry, (February 1869,) gives the following, which he recommends: Take a barrel of fine-ground bone and a barrel of good wood ashes; mix well together and add three pailsful of water; mix the whole intimately, stirring daily; the mass will be fit for use in a week. This is a good manure for corn, a gill being used to the hill. In this fertilizer there is, as stated, no superphosphate found; the bone earth is merely separated from the hard gelatine or animal matter, which is dissolved by the potash of the wood ashes; this organic matter is in a soluble state, the bone earth is finely divided, and there are present the potash and other mineral salts of the wood ash, all of which make a most valuable fertilizer.

The South Carolina phosphates may be treated in a manner similiar to bone ash of the refinery, with vitriol, but will not make so valuable a manure, because the amount of phosphate of lime present is not nearly so great as in bone ash; it rarely exceeds the quantity in bone dust, and has 10 to 20 per cent. useless matter present. Carolina phosphates at $30 a ton will not make a richer fertilizer than raw bone at $45 a ton.—(*Monthly Report, Department of Agriculture.*)

Sunflowers for Intermittent Fever.—Mr. Martin, in a paper presented by him to the "Societè Therapeutique de France," affirms that the common sunflower, extensively cultivated, has the effect of neutralizing the unwholesome vapors which are so fatal to health and life in marshy districts. The Dutch, who live only by dyking and draining their low lands, and are therefore good authority, pronounce sunflower culture a specific for intermittent fever, the scourge of Holland. They assert that it has disappeared from every district where the experiment has been tried. It is not yet known whether this is the result of its rapid growth, producing oxygen, or whether it emits ozone and destroys those germs, animal and vegetable, which produce the miasma which brings fever in its train.

Food for Stock.—Ten bushels of boiled potatoes, mashed and mixed with three bushels of finely ground corn meal, will make as much pork as double the quantity fed in a raw state.

It is the custom of poultry keepers in France to cook their grain for fowls when they intend to fatten, boiling it in water till it is soft enough to be easily bruised between the thumb and fingers.

While all other domestic animals are regularly supplied with salt, the hog is generally neglected. He requires however, to be as constantly supplied as the ox, the horse or the sheep, and suffers as much from privation as either of the above named animals do.

OLEANDER, (*Nerium*).

The derivation of the botanical name of this beautiful shrub is somewhat obscure; while some consider it derived from Neiris, a king of Egypt, others trace it to the Greek word *Neros*, (moist,) as the plant generally grows in the vicinity of brooks and rivers.

There are two species of Oleander; one, the Fragrant Oleander (*Nerium odorum*) is a native of the East Indies; the other, the Common Oleander (*Nerium Oleander*) is a native of the southern parts of Europe; of these the Fragrant Oleander is that mostly cultivated here, and although many varieties are enumerated in catalogues, it will answer all practical purposes for us to make but two distinctions, the white and red (or rather pink).

Our gardeners and nurserymen confine their attention almost exclusively to these two varieties.

The Oleander requires a warm climate, and is cultivated in pots as well as in the open ground. It will withstand a light frost, but not a severe winter. We have seen some beautiful plants twelve feet high in Sacramento and Marysville, where the Oleander seems to feel at home. It flowers there beautifully during the entire summer season, and we do not know a more attractive flowering shrub for localities of similar climate. We have also seen it flower splendidly in Nevada City, during summer in the open air, and during winter in the house. As a house-plant it is easily cultivated, but should be kept clean from insects, and during its growing season rather moist. Here in San Francisco it does not flower well, it makes a spontaneous growth, forces up a strong round flower stem, but the buds in most cases fail to develop themselves. This is due entirely to our cool climate, however, and if we can manage to give the Oleander a place where it can enjoy the full benefit of the sun, and where it is well protected from our strong chilly winds, we have no doubt that it will produce flowers in abundance.

If treated as a pot-plant, all that it requires is a moderately warm situation with plenty of air and light during warm days, and there will be no difficulty in having the Oleander flower freely. We consider a rich sandy loam, with a fair proportion of old manure, a good soil for this shrub.

We have often seen great errors committed in cutting back the flower stock immediately after the development of the flowers; the fact is that if we allow it to remain, new buds will be formed, and new flowers developed, similar to the habit of the Hoya carnosa, (Wax-plant). The stems should therefore not be cut off until they are actually dried up.

The Oleander is easily propagated; plants can be raised by putting the lower portion of the cuttings in a small bottle filled with water. The mouth of the bottle may be closed up lightly with some soft material and the cuttings will soon form young roots; however, here in California we prefer to plant the cuttings in sandy loam or clean sand, and keep them moist, when they will form root in a short time. If the cuttings are rooted in water, the transplanting into soil must be done very carefully, as the roots are very tender and brittle, and they should be kept very moist after transplanting until the plants accustom themselves to soil. This additional care is avoided by raising the cuttings in sand or sandy loam.

The habit of the Oleander is upright, and the disposition of the leaves, as well as of the branches, is symmetrical, being generally in threes. Suckers or side-branches should be cut off at any time, so as to cause the full strength of the plant to pass into its main stem and branches. If suckers and side-branches are permitted to grow on the Oleander, it will not be likely to flower well.

When grown in pots for several years, we have found it very beneficial to the plant to shake off the soil entirely from its roots, cut them in, and then re-pot it in the same sized flower-pot with fresh soil; this should be done during its season of rest. It is hardly necessary to say that the plant should be well watered and kept in the shade for five or six days after transplanting in the above manner.

The Oleander is a popular flowering shrub, and is well worthy of cultivation. If there is no warm and protected corner for it in the garden, it is certainly entitled to a place under glass or near the window.

RAMIE.

A short time ago we had the pleasure of a visit from Mr. J. S. Finch of Hayward's, Alameda county, who is at present engaged in the cultivation of the Ramie plant. We were shown by him, specimens of the Ramie and its bleached fibre. He stated to us that he had raised last year 150,000 plants. He is not at present producing fibre, but intends planting out a large tract of land in the southern part of this State during the present year. He expects to receive a machine for clearing the fibre sometime in May. The cost to be about $300. From a pamphlet furnished by him we take the liberty of making a few extracts for the benefit of our readers.

"This new textile, lately introduced into the United States, is a native of the Island of Java, and was first brought to Europe for investigation in 1844, where it received the botanical name of *Boehmeria Tenacissima*, and, by the beauty and strength of its fibre, attracted much attention in manufacturing circles.

Since its introduction into the United States, in March, 1867, it has excited much interest among European manufacturers.—They consider the fibre of the *Boehmeria Tenacissima* superior to that of any other textile plant, and very valuable for manufacturing purposes; the supply from the East Indies is entirely inadequate to fill the demand, and unequal to the fibre produced here, in quality; they are, therefore, very desirous of seeing Ramie successfully cultivated in some country where the yield will be large and regular.

The soil and climate of California is peculiarly adapted for the cultivation of Ramie, which requires a sandy, loamy soil, and a temperate climate.

Cotton may be totally destroyed by the army worm, or other insects. The fibre of the Ramie, being contained in the inner bark of the stem, cannot be injured in that way, and will not be hurt by either long continued wet or dry weather; besides, it requires but small capital to start a Ramie plantation, the plant being easily propagated and cultivated; it is a perennial, and will not require replanting.

Ramie being a novelty in this country, it is necessary that some general rules should be established for its cultivation.

Rich sandy or loamy soil is the most suitable for a nursery, when the plants are to be rapidly grown. For field culture the plant will thrive in any good sandy or loamy land. To secure a rapid and vigorous growth of roots, the land should be thoroughly and deeply broken to a uniform depth of about ten inches, and well pulverized. Root cuttings should always be used for first planting.

After the ground has been thoroughly prepared as above directed, the roots should be planted about six feet apart each way, three inches deep, and slantingly, with about one inch exposed above the surface. No further attention, with the exception of weeding, is required until they have attained the height of three or four feet, when it will be noticed that they become of a brownish color near the roots—they are then ready for propagation; the stem should then be bent gently down and covered with about three or four inches of loose earth, care being taken to avoid detaching the stem from the parent root. About two inches of the leafy end should be left uncovered. In the course of three or four weeks the layers will have made shoots and may then be separated from the main root, divided in pieces of four or five inches long, for planting in the field.

The cuttings for sale being so limited in number, it would be impossible for farmers to begin planting at once on a very large scale; they are therefore compelled to begin with a few thousand cuttings, and make their own plants.

The culture of Ramie is necessarily divided into two parts.

The culture on a small scale (to propagate and provide cuttings) we have already given. To cultivate in the field, to make crops of fibre, the land must be prepared as in the first instance, with the exception that the plowing is not required to be so deep, although the deeper the plowing the better the crop will be; and

this is the hardest of the labor, but it will amply remunerate.

The land being well ploughed and cleaned, the cuttings obtained from the mother plant must be planted three feet apart, in rows four feet distant from each other. When well rooted, the few stems of these cuttings must be cut off near the ground to force new shoots to spring from the root, and in from four to six weeks thereafter the entire field will be covered with fine green bushes of Ramie. It will be necessary, especially in the beginning, to keep the field clear of weeds; but this labor will be dispensed with when the plant has grown thickly. After five or six crops the field will be as thickly covered as a wheat field ready for the reaper, and will remain so for years.

The time for planting in California is during the rainy season, and the earliest planting will obviously produce the earliest crop of fibre or cuttings, as the farmer may select.

When the stems have attained a height of six or eight feet, they will then be ripe and ready to harvest; and this will be known by the leaves falling from the stock. But should it be inconvenient for the farmer to commence cutting at that time, the fibre will not be seriously injured if the cutting is delayed a week or two.

In cutting the stems, an ordinary mowing machine may be used, care being taken to cut the stems as near the ground as possible.

It will also be advisable to extract the fibre when the stems are not too dry, as that labor is then much more easily performed, and the fibre is of better quality if broken out while in that condition. A simple and easily-worked machine has been constructed for that purpose, with which the farmer can make his crop marketable at small expense. In preparing the fibre for packing, it should be done up in hanks and packed in bags or bales like cotton. All refuse matter, such as leaves, the woody substance of the stem, etc., should be strewn over the ground; no other manure is required.

Plants cannot be injured by cold unless the ground freezes to a depth greater than six inches, and continues frozen for several days. Many persons suppose *Boehmeria Tenacissima* and China Grass identical; this is not the case, although they belong to the same family of plants. The China Grass produces seed from which it can be propagated, but the system is difficult, and the fibre unequal to the Ramie in texture. *Boehmeria Tenacissima* can be propagated from root cuttings, and is the finest variety of the *Urticacea* family. In commercial parlance, the fibres of both the *Boehmeria Tenacissima* and the *Boehmeria Nevia*, or (China Grass,) are called China Grass. In preparing the fibre for market, it will be to the advantage of the producer to ship it in its crude raw state, as very little expense will be incurred in so preparing it. In this condition, as before stated, it is worth from twenty-five to thirty-five cents in specie per pound. In preparing it for the spinner, a chemical process and costly machinery would be required. A factory for this purpose will be erected in the East at an early day, and producers will find a ready market there as well as in Europe.

The Committee on fibrous and textile substances, at the Seventh Industrial Exhibition of the Mechanics' Institute, held at San Francisco in October, 1869, in their Report say:

"We do not propose a premium, because this enterprise is, as yet, but an experiment, but from a careful examination of the subject we are strongly convinced that the cultivation of this most valuable plant can be successfully introduced into California. We are satisfied it will flourish in the Southern counties, particularly in Tulare and Kern counties, where the nights are comparatively warm. Wherever Indian corn can be raised in perfection, there will the Ramie grow. It promises such large profits that, once introduced, it must soon become the great staple of the Southern section of our State."

The same Committee include in their Report the following letter.

SATARTIA, MISS., Sept. 1, 1869.

"The Ramie plant, like everything new, meets with opposition from those who have not practically tested it. We have tried it

this year, and the result is a decided success. It grows eight feet high in this climate, and make two crops a year, and probably three. Its roots grow two feet in the ground and notwithstanding the unprecedented dronght of this Summer—not a single copious rain having fallen since April—it still continues to put forth its luxuriant shoots and grows rapidly. So dense is the shade it makes that the ground continues always moist. Ramie requires the same cultivation as corn the first year, and one good hand will cultivate thirty acres, or three times as much as can be managed when planted in cotton. After the first year little or no cultivation is required, one or two plowings only being neccessary to keep the plants from entirely covering the ground. The second year the same hand will cultivate twenty or thirty acres more, making a field of from fifty to sixty acres, which will thresh out with the Ramie cleaner working all the year. The labor of its cultivation is so light, that it can be performed by white persons or by freedmen indiscriminately. The threshing or cleaning is done under cover." WM. HALL.

Messrs. Andrew J. Moulder, S. S. Tilton and John C. Mitchell, constituted this Committee.

HOW SUGAR IS MADE WHITE.—The way in which sugar is made perfectly white, it is said, was found out in a curious manner. A hen that had gone through a clay mud puddle, went with her muddy feet into a sugar house. It was discovered by some one that wherever her track went there the sugar was whitened. This led to some experiments. The result was that wet clay came to be used in refining sugar. The sugar is put into earthen jars, shaped as the loaves are. The large ends are upward, while in the smaller end is left a hole. The jar is filled with sugar, the clay is put over the top and kept wet. The moisture goes down through the sugar and drops through the hole in the end of the jar. This makes the sugar perfectly white.

THE average consumption of wine in California is ten gallons to every citizen. The average yearly consumption of coffee in this State is sixteen and three fifths pounds.

THE Maine forests have been so well stripped, that not a tree of old growth is to be seen in them. The white pine is represented only by saplings, which will not be of any service, as lumber, for years.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION III.—LANDSCAPE GARDENING.

In California one of the most important considerations in Gardening of every description is a copious and continual supply of water, and every individual, as well as each large community, in fact the entire State itself, has excellent reasons for giving this subject the gravest attention. In most of the larger cities of California, companies have been formed for the purpose of supplying the inhabitants with water, for domestic purposes as well as for the irrigation of ornamental grounds; the charges however for water are so enormous that these water companies have discouraged gardening and public improvements, in very many instances. Their excuse is a limited supply of water, but we believe this to be incorrect. The business of supplying cities with water seems to be monopolized as much as many other branches of commerce and industry. Yet the occupant of a city residence is far better situated in this respect than the owner of a rural residence, who is dependent on his own resources, and how is he to overcome the difficulty? This need should be provided for by proper legislation, and we have no doubt that with moderate State aid, assisted by contributions from private individuals who are directly interested, some of the irrigation schemes, (so much vaunted, but not carried out) could be successfully consummated, so that thousands of acres now laying waste, might be put into a high state of cultivation for various purposes, and our hill-sides would be covered with fine villa grounds and rural residences.

To make Landscape Gardening what it should be, we need ample water, not so much for the cultivation of the trees, most of which will live and thrive by being planted early, and having the soil worked deep, but the majority of the flowering shrubs, the flower beds, and the lawns, must have water during the heat of summer. Besides this, water is required for other purposes, as the formation of lakes and

ponds, the supply of brooks and rivulets, cascades, and waterfalls, of jets, and fountains. We agree with Downing, one of our best American authors on Landscape, who says: "The delightful and captivating effects of water in Landscapes of every description, are universally known and admitted. The boundless sea, the broad, full river, the dashing noisy brook, and the limpid meandering rivulet, are all possessed of their peculiar charms, and when combined with scenes otherwise finely disposed, and well wooded, they add a hundred fold to their beauty."

In California the absence of water as a feature in Landscape is more observable than in the East, or in Europe, on account of our dry summers, and we regret to say that no department of Landscape Gardening is more neglected and less understood than the introduction and management of that feature. It would be well therefore for every one who contemplates laying out extensive grounds, to search diligently for water. Independent of the companies, water may be obtained from springs, artesian wells, by windmills, or by horse or steam power; springs cannot be found everywhere; the boring of artesian wells is too experimental, and windmills are uncertain, but horse and steam power are more reliable. At some future time we will treat this subject more fully.

Many other features are requisite, and still others may be introduced into the grounds of a rural residence, as vegetable and flower gardens, lawns and rockeries, green-houses and conservatories, aviaries and grottos, arbors and summer houses, rusticwork and statuary, etc. We shall speak of all these embellishments more minutely in due time.

We will now make a few remarks in regard to the entrance to the grounds of a rural residence. In a large majority of cases we notice the total absence of embellishment outside of the entrance gates, even a meagre appearance of the gates themselves, as though they were nothing more than a moveable portion of the common board fence; also a neglected appearance of the approach from the gates to the house, producing the impression that nothing more was desired than a fine architectural building. The entrance gates, with their surroundings, and the approach to the house, should be in keeping with the house itself and the ornamental grounds.

In concluding our general remarks, we will advise all those who contemplate improvements similar to those of which we have treated, to prepare, or have prepared careful estimates, not only of those contemplated improvements, but also of those current expenses which will be necessary to keep them in good order. We think it very indiscreet to cultivate any more ground for ornamental purposes than the owner is willing to keep in proper condition. In all these matters it is particularly desirable that an able and reliable Landscape Gardener should be consulted. We are convinced that projectors of ornamental grounds whether on a large or small scale, will profit by timely advice. Most people know how to admire a beautiful garden, but few understand how to accomplish what they admire, and they therefore require the aid of some one who has made it a study, and who by experience is prepared to adapt the rules of art to the natural features, and is able to guide their taste. Landscape gardening is yet in its infancy in California, and it will be an arduous task to establish it here as one of the fine arts, as it is in Europe. We find very few men who take any pleasure or delight in performing the labor pertaining to gardening, not from want of time, but because they think it beneath their dignity; but there is scarcely such a person to be found as a lady who is not fond of flowers; many of them are enthusiasts in gardening, and we know several of our most highly educated and intellectual ladies are early, diligent, tasteful and successful workers in this pre-eminently healthy pursuit, and they are abundantly repaid by their enjoyment of all the delights connected with the association with choice plants and flowers; by the pleasure of successful enterprise, and by the possession of that rich glow of health and contented calm, which are invariably attendant on this delightful recreation, and if we are successful in effect-

ing a general reform in the taste for gardening, it will be through the valuable example and assistance of these our more refined ladies, who have so just an appreciation of the beautiful.

In our next we shall inaugurate a series of articles on the different features of Ornamental and Landscape Gardening, which we hope will meet with the approval of the readers of our magazine.

CALIFORNIA GRAPES AND WINES.

So much has already been said about the cultivation of the Grape, and the making and keeping of Wine, that it seems difficult to present anything new. In this article, however, we propose to treat on the entire absence of united action on the part of the cultivators, to obtain the best possible results; and then refer to the prejudices of consumers, and their indisposition to patronize home products and home manufactures.

It is a settled fact that we have both the soil and climate to grow excellent Grapes for the table, for wine and for raisins; of which three uses the manufacture of Wine is the most important. In relation to the making and keeping of Wine, we believe there are many opportunities for improvement, and it certainly is a most important question how these improvements may be inaugurated. We notice in the Eastern States, where the Wine interest is of much less importance, its cultivation being limited to a comparatively small number of acres, that a general feeling has arisen for united action on the part of practical men, to subject the Grape and the Wine to various experiments, and tests, in order to obtain the very best results; but we also notice with regret among our own Grape growers, that same unfortunate selfishness and inactivity which is so characteristic of Californian industries and pursuits. However, we hope to see before long more united action on their part to protect, improve, and further their own interests.

In this connection we will refer to a report of Hon. J. Stanton Gould, Secretary of the Committee of the Pleasant Valley Grape Growers' Association, upon the Grape tests at Hammond's Port, New York, October 12th, 1870, as published in the "Pleasant Valley Fruit and Wine Reporter."

"The Annual National Convention for the testing of Grapes, was held at Hammonds Port, Steuben county, New York, commencing on Wednesday, October 12th, 1870, and continuing through that and the next following day. There were present Col. Marshal P. Wilder, of Boston, Massachusetts; Mr. Charles Downing, of Newburgh, New York; Dr. John A. Warder, of Cincinnatti, Ohio; Mr. James H. Ricketts, of Newburgh, New York, and J. Stanton Gould, of Hudson, New York. Col. Wilder was with great unanimity elected chairman, Dr. J. A. Warder, chemist, and J. Stanton Gould, appointed Secretary."

Before this Convention of well-known and prominent Horticultural men, Catawba grapes of 13 different localities were presented, and after converting into juice a remarkable difference as to the amount of sugar and acid in each sample was ascertained. The amount of sugar to the 100 gallons ranged from 182 to 240 pounds, and the amount of acid from 533-100,000 to 775-100,000. Of the Isabella Grape, specimens from seven different localities were presented, and the juice of the different samples, gave from 168 to 183 pounds of sugar, to the 100 gallons, and from 490-100,000 to 710-100,000 of acid. Other varieties of Grapes were presented, but we omit them, as they are not, to our knowledge, cultivated with profit on this coast.

We will here remark, that although very poor samples of both the Catawba and Isabella grapes, (the Catawba in particular), were exhibited during our late Horticultural fair in San Francisco, both of these varieties thrive well in the northern parts of California. In the vineyards of Mr. Seibert, of Mr. Hellwig, and of Mr. Craig, of Nevada City, we have seen them growing in perfection. This would indicate that these grapes require a locality where the contrasts of winter and summer are stronger than near the coast range, and the

valleys. We are certain that some of the most valuable grapes for wine-making, will do better among the higher foothills of the Sierra Nevadas, for the same reason. But it was not so much our intention to speak of this fact as to demonstrate the necessity, and the practicability of following the example of our Eastern friends, in gathering knowledge by practical experiment, and imparting to one another and the general public, the results of our experiments and deliberations. So long as a few individuals who have succeeded in producing an excellent article of wine, persist in keeping their experience to themselves, so long will the large majority of our grape growers suffer, the bulk of California wine be inferior, and of consequence, the reputation of our wines be at stake.

Now let us see what these experiments and deliberations of our Eastern friends amounted to.

First.—In regard to the influence of soil, on color in grapes. Grapes grown on clayey soil were invariably darker and more glossy, and would be estimated by appearance to be richer than those which had been grown on gravelly soils, which were lighter in color, and less covered with bloom; but the Saccharometer and Acidometer estimated differently, they showed that the richest grapes were those which were not grown on clayey soils.

Second.—In regard to influence of exposure. It will be observed that there are great discrepancies among grapes of the same variety. The answers to the questions submitted this year fail to account for this. Thus among the Catawbas, there was a difference of 46 pounds of sugar in the one hundred gallons of wine. We attribute part of this difference to the amount of water which had been evaporated from one sample before it was brought to the press; but how are we to account for the difference of twenty pounds of sugar in two other samples. The exposure of the sample containing the excess of sugar is toward the southeast, while that of the sample containing the minimum quantity is toward the east. Are we to take for granted that the difference between an eastern and a southeastern exposure, amounts to twenty pounds of sugar per 100 gallons?

C. H. Perry, and the Pleasant Valley Wine Co., have each of them grapes containing precisely the same amount of sugar in them. The former has a southern, and the latter a southeastern exposure. It does not seem from this, that a southern sun has a very magical effect in augmenting the amount of sugar in the grape. The amount of acid in each, is also very nearly equal, we will however add, that the grapes of the Pleasant Valley Wine Co., were gathered on the 26th of September, and those of Mr. Perry, on the 11th of October. Mr. Parker's grapes contain five pounds less of sugar than those of the Pleasant Valley Wine Co; but his exposure is east by south, while theirs is southeastern. The grapes of the Urbana Wine Co., contain seven pounds less of sugar, with a western exposure, than those of the Pleasant Valley Wine Co., with a southeastern exposure; but on the other hand, they contain six pounds more of sugar than those of Mr. Fairchild, which have a southern exposure. Both Perry and Fairchild, have the same exposure towards the south, the former has thirteen pounds of sugar less than the latter; but we must take into consideration other circumstances: Fairchild's grapes grew on a shaley soil, with a clayey sub-soil; ploughed twice and hoed, distance between the vines, seven by seven feet; time of picking, October 6th. Perry's grapes grew on gravelly loam; ploughed and hoed once, distance eight by eight feet; time of picking, October 11th.

On carefully collating, and comparing the data obtained this year, it seems that in the long run, and in the greatest number of cases, eastern and southern aspects have an advantage over northern and western ones; but so many modifying circumstances have to be considered, that this influence is probably less than has been generally supposed.

In the majority of cases, California grape-growers have paid but little attention to these matters, and we believe that the sooner steps are taken to test the condition of things, the better it will be for all parties concerned.

California wines do not stand as high in the East in general reputation as is desirable, and as is generally supposed; this evil may be easily obviated by supplying to our cultivators generally, the best method of treatment which has been arrived at by those who have proved successful. In support of our ideas we extract the following from the New York *Evening Express:*

"When some years ago it was publicly announced that Americans as a people should no longer be dependent upon the varying chances of foreign harvests, and the equally doubtful uniformity of our national tariff, for the purity of their wines and liquors, a feeling of thankfulness found expression in our minds, and our stomachs rejoiced at the hope of deliverance from the long course of logwood and poison that had gone far to ruin them; not until this statement had been fully and exhaustingly considered by our people, had California been so truly the promised land to us, the real El Dorado, furnishing us the foundation of human enjoyment and a medicine which would extend our lives and health. It was not long before our physicians left their legendary prescriptions of foreign wines for their patients and concluded to give our invalids a native article that contained every essential of the old, and with it the prime and necessary associate, purity. This was the beginning of the new era. As large crops warranted it, dealers began to advertise California table wines, that were novelties in our high priced age, and the people, full of hope and confidence, entered upon the new path.

For a while every hope was realized; wanting strength and age, the new wines did not at once overcome the tastes of the veteran drinkers, who by a long course of liquid fire had become unable to appreciate pure wine; still at every bar, "native wine" became known and noted, to the injury of the manufactured brandy and whiskey that had before been the only drinks. Hardly had this much been accomplished when the demand had exceeded the supply, and knavish dealers, unwilling to forego the profit, set their manufactories to work out California liquors as they heretofore had foreign. Home demand helped this scarcity, for with unexampled strides the new State was marching on in wealth and power, and soon interested parties published the statement that all the California wines were used at home, and what was so called at the East, was a manufactured article. The bad article sent out by dealers, helped on this rumor, and soon the brand was shunned as if it had been a deadly poison.

The failure of this experiment, however, only proved to our people that the resources of the country were enough to warrant the attempt to supply our country with a pure wine.

What we want now is cheap and good Wine, something that shall take the place of our fiery brandy, now slowly but surely destroying our youth, and laying up the seeds of hereditary disease, that will surely result in suffering spread broadcast among our descendants. All are willing and fast to acknowledge this want, this necessity.

The evidence of all men upon this point is uniform, that in countries where wine is cheap and pure, drunkenness is unknown, we burn our brain and our bodies by the fiery fuel that we pour into our stomachs, because we force both into an unnatural activity. Purify and weaken our liquors, and the system is invigorated, pleasantly excited, and the whole physical and mental economy perfected. Men who are trained to a fanatical worship of cold water, affect to find in this fact the danger of native and cheap wines. We do not believe that the government either of habits or of nations, can exist on a basis of fanaticism. There must be a golden mean. Satisfied that no laws can destroy the evil of intemperance until we gradually educate the people by pleasing their tastes, and by so doing improve them."

The N. Y. *Evening Express* is right in advocating our native wines. We do not know what our California wines are sold for in the East, but we can assure our Eastern friends that the article is obtainable at very reasonable prices in our own markets, so that every

one here can afford to drink our home product of wine, but we are necessitated very reluctantly to admit, that even here, it is difficult for the lover of our prime wines to obtain the best article. We do not understand why the bulk of our wines should not be of superior quality, if proper attention were paid to the making and keeping of them.

When our system of wine making is perfected, and not till then can we expect that our people will become a wine drinking, instead of a whiskey drinking people.

RHODODENDRON CALIFORNICUM.

(*California Rose Bay.*)—*See Illustration.*

We give in this number of our journal, a true representation of this beautiful California flowering shrub, which grows with great luxuriance in Santa Cruz county, and a few other localities.

The R. Californicum belongs to a numerous family of evergreen flowering shrubs, which are considered in the East and Europe, valuable acquisitions for the gardens and conservatories. Here on the Pacific coast, they have commanded but little attention; in fact, we believe that there are not over a half dozen of these plants in cultivation, (at the present time,) in this city. Our gardeners and nurserymen say that they will not do well here; how much they are in the right, we shall at some future time endeavor to show. Inasmuch as the R. Californicum grows to such perfection, within a few miles of San Francisco, we have every reason to suppose that some of the others could also be grown with satisfaction in our gardens. The efforts which have been made by our gardeners and nurserymen, can by no means be considered final.

The R. Californicum, is found growing in masses along the margins of creeks, and in hollows, in a damp sandy soil. It attains the height of from four to six feet; having a beautiful dark green, glossy foliage, and clusters of flowers of a delicate rose color. Its flowers are developed during the early part of May, and remain in bloom for some time. The specimen from which our plate was taken, was found growing at Waddell's Mills, Santa Cruz county. The original painting from nature, was executed by A. W. Saxe, of San José, through whose kind permission we are enabled to reproduce it, and so furnish our readers with a representation of one of the Floral Beauties of California.

THE CULTIVATOR OF THE SOIL, THE MANUFACTURER AND THE CONSUMER.

It is all very well for the newspaper men to undertake to demonstrate to our agriculturists and horticulturists that California is able to produce with ample profit the very many articles introduced into our fields and gardens; and we notice that the farmer is only too willing to adventure a crop which promises to pay him so well for his labor, although he is really risking in many instances more than he can well afford. But how often does he meet with disappointment when he brings his products into market and finds himself entirely at the mercy of certain combinations which are organized to deprive him of his just remuneration, while they impose their own prices upon the consumers. The producer of limited capital is compelled to take whatever he can realize, and he goes home discouraged.

Of course we are not now alluding to the fluctuations of market prices, which doubtless are ruled by circumstances other than that referred to—in the same manner as other legitimate business—we allude to those operations in which both producer and consumer are victimized.

There are many other circumstances which annoy and embarrass the farmer, but for want of space we shall at present only allude to one other of these, and that is, the condition in which the cultivator is necessitated to bring his produce into market. The farmer, for instance, who raises sugar beets, supplies his crop in a raw state; and we attribute the early success of the beet sugar manufacture to this fact. But how is it with the ramie, silk, flax, etc. Here the farmer is not permitted to furnish the raw material, but is necessitated to

pass his product through several initiatory processes before it is presentable in the market, thus prepared for the manufacturer or for commerce. It appears to us that the manufacturer imposes upon the cultivator a portion of labor which really belongs to his own department. The work of preparing flax, ramie, silk, etc., for the manufacturer must surely be an embarrassment to the farmer, as it compels an additional outlay of capital for machinery which may be difficult to procure and keep in order, and only be required for a short time and then be set aside to spoil. He is not likely to possess the necessary knowledge for the process, and will possibly require a different staff of employés from his usual farm laborers. If the farmer were permitted to bring the raw product to market, the material could be prepared cheaper and more uniform by skilful and experienced hands, with efficient plants of machinery and every needful appliance. And if the cultivator could realize the cash for the flax-straw in its raw condition, thousands of acres would be under cultivation with that crop; but so long as he is expected to do the rippling, breaking and hackling, of which, doubtless, he has little knowledge, and which compels an additional outlay, we are afraid he will be rather slow in the production of this article.

The labor of the farmer should end with the gathering of his crop, and that of the manufacturer should begin when additional preparation is required—this applies to flax, ramie and silk in equal force.

Let a manufacturing company advertise for the raw material of these articles and the farmer will readily respond; here is an instance where capital could come to the aid of the cultivator, and thousands of acres now lying idle would be brought under cultivation.

We do not hope for much better times in California until capital allies itself with the advantages of soil and climate to encourage home manufactures and home industry.

BEET SUGAR.—A lot of two hundred and fifty barrels of Alvarado beet sugar was sold in San Francisco for fourteen cents per pound. At this price an immense profit is assured to the manufacturers.

SUGAR BEET CULTURE.

SHERMAN ISLAND, December 22d.

Probably there is no question relating to agriculture creating more inquiries than the subject of raising beets for sugar; and, therefore, I would caution all persons before going to raise them, that they have the right kind of seed. Because a beet is of the sugar variety, it does not follow that it will do to make sugar of.

My experience in the raising of sugar beets from seed has been thoroughly tested during the past seven years. I have grown eleven different varieties, and in 1867 I had nine of them tested at the sugar refinery by Mr. Spreckels. The result was that five were condemned, they going below eight per cent. Three of them gave an analysis; one of twelve, the next ten, the third eight per cent. Of the two first I have this year raised some 600 pounds of the following varieties: First best *White Tropical*, second best *Green Sileria*.

I have noticed in several of the papers inquiries as to what kinds of soil are best adapted to the culture of sugar beets, and if that of an alkali nature will do.

I have grown them in Alameda in deep, sandy soil; near Oakland on dark, gravelly soil, on dark, alkali ground, and upon this island. My judgment is that land that has a small amount of alkali in it, is not in the least detrimental to the raising of the beet for sugar; instead of being an injury I think it would be of value. Adobe land will not answer for beets, for I have tested that well; I should prefer tule or black loam to a sandy soil. The sweetest beets I have ever raised or tasted of, have been grown upon this island, and although I have not seen any of them tested, I think they will give 13 per cent of sugar. And again, I am satisfied that there is no better place for a sugarie than upon this island—the richest of soils, every access to the market, plenty of coal and the best of water.

My views in regard to the planting of beet seed for sugar differ a little from that of raising them for stock. For sugar the quan-

tity of seed that is necessary is about five pounds to the acre, sown as follows: The drills to be thirty inches or two feet apart and seed planted at intervals of six inches in the row; the ground to be well plowed at least twice or three times if convenient, then well cultivated with a horse-hoe cultivator. My judgment is that the beets ought not to weigh over from eight to ten pounds, as at that size they will contain the largest amount of saccharine matter. I am of the opinion that we can raise them to the amount of forty tons per acre on the island, and keep a sugarie in full run all the season. There is one thing quite certain, I can grow a crop of water melons that will be ready to make into sugar the first or middle of July. After that will come the beets. Then I have succeeded in growing a fine cantalope that comes in the first of December, and will run into January. The name of them is Magnesia, the seeds of which come from Asia Minor. They stand the frosts well and are only fit for the table in the winter. When ripe they are delicious and seem to be full of saccharine matter and are very solid.

Probably there was no man in the State so well pleased as I was, when I heard that they were successful in making sugar at Alvarado. I have written for the past six or seven years that California could or would beat the world in making sugar from beets.

In my article published in the *Pacific* of July 19th, 1869, I predicted that the time was not far distant when we would be making sugar from beets, not only for ourselves, but export large quantities of it, and I still adhere to it, that, take all things into consideration, climate, soil, and a good supply of capital, that in less than a decade California can furnish the entire Union with beet sugar. It only requires a little time, only a beginning, and when skill and the right kind of men take hold of it, we can then feel proud that we live in a State that yields us abundance of grain to feed upon, abundance of wool to clothe us, and sugar to sweeten us, through the journey of life. No greater monument can be built in this State than the towering chimneys of a hundred sugar mills. It will give labor to many, and bring from the old countries, hundreds of skillful workers in that branch of business.

D. L. Perkins.

POPULAR BOTANY.

CHAPTER III.

As has been stated in a former chapter, the stem is that portion of a plant which pushes its way above the soil, seeking the influence of the atmosphere and sunlight, and producing as a distinguishing feature, branches and leaves. Branches are but a duplication, as it were, of the stem, being produced from the main stem in the same manner as the parent stem was produced from the seed.

A stem always has an ascending direction at the commencement of its growth, but does not always maintain it. In some plants it soon trails on the surface of the ground, or even penetrates beneath it, from whence it sends up branches, flower-stalks, and leaves.

In the embryo, the stem is supplied with leaves in a state of more or less perfection, and as this stem elongates, the leaves are produced at certain definite points. The growth of a stem is principally between these points which allows the leaf-points to increase their distance from one another, and secures their proper development. The joints, or points from whence the leaves arise, are called *nodes*, while that portion of the stem between the two points, is termed an *internode*. In many plants these points are not readily distinguishable, while in others, (as the bamboo, sugar-cane and the grasses,) they are well marked.

In the embryo, the stem consists of but a single joint with a node at its terminal point, which repeats itself, producing a second like the first, and a third like the second, and so on during its period of growth. Thus we find that a stem has always at its apex, or summit, an undeveloped portion, which is called a *bud*, and is in fact the terminal node of the plant. In addition to this terminal bud which contains

the main stem, we find one or two additional buds as new axis of growth, giving rise to branches, which as we have before stated, are but repetitions of the main stem. These branches are provided with buds in the axils of their leaves, bearing the same relations to the first branches, as the primary branches bear to the stem. So we see the whole is but a "repeated repetition" from new points, of what occured in the first axis of the embryotic seed. This regular law of development is often interfered with; many of the buds remaining dormant, or are destroyed, others being developed in their stead. Here we get a modified form of the plant, shrub or tree whose branches to a certain extent are produced in an irregular manner. This want of development seems to occur without order, yet even here, we see a certain uniformity of action in each species.

It is on the characteristics of the stem that the oldest division of plants is founded. *Herbs;* containing no woody fibre and generally dying (at least so far as the stem is concerned) after flowering. *Shrubs;* woody plants branching near the ground, and less than thirty feet in height. *Trees;* growing to a considerable height, with stems unbranched near the ground. In trees the stem is called the *trunk*, in grasses a *culm*. Stems which do not grow erect, that is, recline or trail on the ground, are said to be *decumbent*, *procumbent* or *prostrate*; and when they strike roots at certain points they are called *creeping*. There are other forms of stems such as *climbers*, which elevate themselves by means of tendrils (as the Passion-Flower) or by their leaf-stalks (*Clematis*).

A *Stolon* is a form of branch, which curves or turns down to the ground, and there strikes root, making an independent plant. It is no doubt but this action on the part of nature first suggested to horticulturists the process of *layering*.

A *Sucker* is a subterranean branch which has pushed its way along under the ground, until at last finding a favorable chance and locality, it rises out of the ground and becomes somewhat independent of the parent plant. It is by severing the connections existing between the two, that gardeners produce plants by division.

A *Runner* is a slender prostrate branch rising out of the base of the parent stem, striking root at its apex, and producing a tuft of leaves. Of this class the strawberry furnishes the best example.

An *Offset* is but a modified form of the above, and the two might be considered almost identical.

A *Spine* is an imperfectly developed branch, and is contracted at its apex into a sharp ridged point; being in common language a *thorn*.

A *Rhizoma*, or *rootstock*, is a prostrate stem growing either beneath the soil, or upon its surface, and is thickened by the accumulation of nutritive material in its tissues, which serves as a source of nourishment to the plant.

A *Tuber* is formed by the enlargement of the apex of a subterranean branch, the further elongation of which is stopped, and the whole very much thickened by deposits of starch, etc., in its tissues. A potato furnishes the best example of this form of a stem.

A *Cormus*, or *corm* is a fleshy stem somewhat round in form, and growing beneath the soil; they are compact in texure, and resemble a bulb to such an extent, that they have also received the name of *solid bulbs*.

A bulb is a shortened stem covered with scales; in growing they produce a flower stalk from the apex, and send out roots from their base. The bulb, then, we see, is really the stem of the plant. The Hyacinth is an example.

We have so far given a few of the most important forms of the stem. In our next chapter we shall take up its internal structure and the duty it performs in the economy of plant life.

THE cactus fence is an institution peculiar to Mexico. The variety of the plant used for this purpose is called the orango. It is eight sided, and shoots up straight as an arrow, from ten to twenty-five feet in height, and five to eight inches in thickness. The fence builders cut the cactus into sections of right length, stick the cut end into a trench, cover the dirt around it to the depth of about a foot, and the fence is made. The pieces are set as closely together as possible, and, as they take root and grow for centuries, the fence improves with age, instead of going to decay like other fences.

INTRODUCTION OF GAME INTO CALIFORNIA.

In looking over our vast plains, up the rugged mountain sides, deep down into the wooded gorges, searching and seeking in vain for birds familiar to us in other parts of the world, we ask ourselves the question, why it is that here in this moderate climate, with food and cover in abundance, we have so few of the different varieties of game birds. If we take Quail from the list of California game birds, we have absolutely no upland shooting here. The Grouse family also are but poorly represented, at least we miss the Ruffed and Pinnated, the Partridge, Ptarmigan and Pheasant. There is no reason why these birds once introduced should not multiply and do well here.

The Ornithological and Piscatorial Acclimatizing Society of California, has been already organized not only for the purpose of importing the different species of game birds and fish foreign to this State, but also for the protection of those already here. In aqua culture the field of work for this Society is extensive, we have no Pickerel, Black Bass, White Bass or Pike, and but a few very inferior Trout compared with those of other countries. It is the intention of the Society to hatch fish artificially, and when hatched to stock the streams, lakes and ponds of this State, and when practicable to import live fish and to breed from them.

The following are the birds and fish recommended by the Committee, nominated by the Society for that purpose.

BIRDS.

Ruffed Grouse.....*Tetrao umbellus*
Pinnated "*T. Cupido*
Wood Grouse, or Caper Cailzie..*T. urogallus*
Black " " Black Cock.....*T. tetrix*
Red " " Red Ptarmigan,....
Lagopus Scoticus
White " " Common Ptarmigan.
L. mutus
Partridge.....*Perdix cinerea*
Red Legged, or French Partridge.....*P. rufa*
Quail, (Eastern).....*Ortyx Virginianus*
" (British).....*Coturnix dactylisonans*
Wood Cock, (if possible).....*Scolopax minor*
Turkey.....*Meleagris gallopavo*
Pheasant (European).....*Phasianus torquatus*
Golden Pheasant, (China).....*P. pictus*
Silver " "*P. mychemerus*
Pigeon.....*Columba migratoria*

FISH.

Black Bass, White Bass, Lake and Brook Trout, Pickerel and White Fish.

Many of the feathered songsters might be added to the list useful for destroying insects and worms, as well as pleasing to the ear.

There are none of the game birds on this list, that will in any way interfere with the welfare of the horticulturist or farmer, with the exception of the wild pigeon. There are many of our farmers who harbor the idea that the importation of game birds will be deleterious to their interests, but the very reverse of this is the case, although we admit at the harvest season they eat a few kernels of grain, but to the growing crops they are a decided benefit by the destruction of grubs, snails, insects and worms that are continnally and everlastingly eating both root and seed of all vegetation. A few of the game birds are at certain seasons gregarious, but the great bulk of the different varieties are to be met with singly or in pairs. The very time the congregations are largest is about the time the farmer is cutting his crops, and after the breeding season, the birds are usually shy, and remote from the habitations of man. The nourishment that supports the class of Gallina, is made up of the small seeds of grasses, weeds and flowers, mixed with a large quantity of animal material in the shape of flies, worms, grasshoppers and other insects. It is a known fact that the common hen will not live on a diet of wheat and water, and he who cares for them properly supplies them with animal matter in some shape or form, or permits them liberty to forage for themselves. The domestic hen or turkey will do well miles away from the grain field, and industriously scratch a livelihood. Game birds then will do no harm to the growing crops, their haunts and homes being gen-

garden, and if they pay the vineyard or orchard a visit, their visit will not be as injurious as generally supposed. The Red-headed Woodpecker, Blue Jay and California Linnet, will do more damage to the fruit grower, than all the family of game birds. Add to those few birds the mammals, viz: the Gopher, Squirrel, Skunk and Coon, and you have the worst enemies of the farmer.

To every true lover of the dog and gun, California is a paradise, for low-land and bay shooting. Since the days when "Cush begat Nimrod," who was a "mighty hunter before the Lord," never was there a better field for sportsmen than this, our adopted State; add the different varieties of game from other countries, and we have within our own boundary everything the heart could wish for, and the appetite demand. The people of California may rejoice on the day when the Ruffed Grouse on the wooded mountain sides is heard drumming his praises to Nature's God, who so beautifully adorned him; his congener the Pinnated Grouse, strutting over our broad vallies, thankful that after many miles of travel, he has found so beautiful a resting place; and our little Bob White, the familiar little Bob, shouting from early morn till night, his note of joy echoing from mountain top to valley beneath, his voice reverberating through the deep gorges and cañons, mingling with the hues of the rustling leaf, clad in all the gorgeous hues of the rainbow, and yet so harmoniously blended by Nature's artist that he looks both trim and modest.

This valuable Society had a law passed last legislature, to prohibit the killing of all imported game birds in this State, for a period of four years, under the penalty of fine or imprisonment. This will be ample time to stock the country, at least to have their numbers increase sufficiently to protect themselves. We will be content the day we can capture a White Bass, from some mountain lake, or kill a Grouse on the neighboring hillside, returning to the camp fire to discuss dainties now far from our reach.

As a matter of interest to the State at large, the importation of game birds and fish of different species will furnish a large supply of good, nourishing and healthy food for the inhabitants.

The Ornithological and Piscatorial Society are in communication with several well known sportsmen in the East, in London and in Australia. R. B. Woodward, Esq. has with his usual generosity, offered the Society both room and water in his gardens to hatch out some thousands of trout ova which they have on the way from the East.

All persons holding large tracts of land containing springs, will remember that they may be made with little outlay, a source of great profit, as one acre of water properly stocked and taken care of, returns as much income as ten acres of land used for farming purposes.

The mountains, valleys, streams, lakes and woods, peopled with animated nature in the shape of birds and fish (whose flesh is appetizing and suited for the well being of man) the capture of which in a legitimate and sportsman like manner, gives enjoyment, and hearty invigorating exercise to the emaciated muscle and over taxed business brain.

We sincerely hope that the endeavors of this Society will meet with the approbation and cordial support of every well wisher of this State.

J. Williamson.

Cement for Fastening Instruments in Handles.—A material for fastening knives or forks into their handles, when they have become loosened by use, is a much-needed article. The best cement for this purpose consists of one pound of colophony (purchasable at the druggists) and eight ounces of sulphur, which are to be melted together and either kept in bars or reduced to powder. One part of the powder is to be mixed with half a quart of iron filings, fine sand, or brick dust, and the cavity of the handle is then to be filled with this mixture. The stem of the knife or fork is then to be heated and inserted into the cavity; and when cold it will be found fixed in its place with great tenacity.

AGRICULTURAL AND HORTICULTURAL WORK FOR JANUARY.

The weather during the latter part of December and the beginning of January was very fine for all out-door work; although unfavorable to the farmer on account of insufficient moisture. Had the same continued much longer, the consequences might have been serious; but as we are now writing a general rain is descending, and from appearances at this moment there is no occasion for anxiety. The young grass has certainly suffered somewhat, and more land would doubtless have been planted, had we had earlier rain; but there is time enough yet to make all right. The croakers may as well postpone their lamentations *sine die.*

It is difficult to establish rules as to time for agricultural and horticultural work, applicable to every locality; the best we can do is to suggest a plan of operations which may be available in an average climate, such as San Jose, Oakland, Sacramento, etc. But even if we could suggest positive rules, yet every year's experience of the practical cultivator may induce him to modify those rules to suit his peculiar locality, or his special convenience. Those which we offer are generally, though not invariably, practiced throughout the State.

Whoever has taken advantage of the fine weather for farming, to prepare his ground for planting trees, shrubs, and vines, should proceed with that operation without further delay. In the extreme northern parts of the State where heavy frosts occasionally appear, the planting of grape-vines should be delayed until February or March, unless the weather should be very pleasant and open; but in all moderate climates, further delay may be injurious.

Lawns and flower-beds which were well manured during the last month, should still be left undisturbed for another month, so as to permit the rain to carry down all the fertilizing matter of the manure into the ground. In many cases, even an additional top-dressing may be advisable, as manure when spread over the ground and exposed to a dry atmosphere, will to a great extent, if not entirely, lose its fertilizing qualities.

The pruning of trees and shrubs, the clipping of hedges and borders, and the trimming of flowering and ornamental plants should be performed immediately, if not already done. The latter part of December and the beginning of January, was rather severe on tender out-door and green-house plants. We have had a spell of cold weather, which to the best of our knowledge, has been of longer duration than has ever been previously experienced,—yet comparatively little damage has occurred, which is doubtless attributable to the fact that the atmosphere was rather dry than otherwise during that time. We have not heard of any serious effects from the cold weather, on any other than such plants as are cultivated for ornament.

In the green-houses, fires had to be resorted to, and our professional gardeners had to be on their guard for several days. During such cold weather as we have experienced lately, we advise the watering of green-house and parlor-plants more sparingly, and to give plenty of air from early morning till early afternoon; also to close green-houses early during cold weather, which has the effect of retaining the warmer temperature of the day, always remembering that plants that receive little airing suffer most from frost.

Orchards and vineyards which have been pruned, should now be cleared from all rubbish; stakes should be examined and replaced where necessary, and stocks and branches tied up.

It is now time to make cuttings of such trees and vines as are propagated in that manner, such as mulberry trees, grapevines, gooseberries, currants, &c., &c. These should be carefully selected from strong wood, tied up in bundles, and buried in light well drained soil in some shady place, until the ground is prepared to receive them. It is not so well to plant cuttings immediately after they have been taken off.

Hyacinths which were planted about the latter part of November, or early in December, are

now coming into bloom, another set of them should be planted, so as to have them flowering as the others fade.

Various bulbous roots may now be planted in the open air, such as Hyacinths, Tulips, Crocus, Narcissus, Peonies, Gladiolus, Lilies, &c. The planting of Dahlias should, however be delayed for a time to allow the roots to rest, and also as any light frost will kill their young shoots.

Flowers from out door sources have been scarce during the past month, on account of the cold weather. Violets, Sweet Alyssum, Laurestinus, Polygalas, and the Acacias, bloomed as freely as ever, but Roses and Pinks are scarce, although enough of them are produced in the open ground to supply the wants of our florists. For some reason there is a falling off in the quantity of Violets brought into this market, severe frost no doubt checks them also, but even in pleasant weather the demand seems less abundant. What is the cause?

Under glass and in the parlor window, the Camellia is now producing its exquisite flowers in profusion, while the demand for them is fully equal to the supply. Chinese primroses are also in full bloom. The Azaleas, Cyclamen, Cuerarias, Cuphea, (fire-cracker plant), Bouvardia, Bignonia grandiflora, Fuchsia and Heliotrope, are among the chief attractions of the green-house at the present time.

In the kitchen garden we advise the planting of early cabbage and cauliflower plants, and the sowing of later cabbage and cauliflower seeds. Cabbage, cauliflower and tomato seeds should be sown under glass and transplanted. Early vegetables such as peas, radishes, lettuce, carrots, &c., may be planted now at any time, when the ground has been properly prepared; if the weather should continue cold, which is unlikely, we may lose some of the seeds in the open ground, but we must take those chances, seed is cheap, and we can well afford to plant twice.

When we visit our markets at the present time, and notice young onions, leeks, cabbage, cauliflowers, artichokes, celery, parsnips, young radishes, lettuce, spinach, green peas, &c., &c., it seems that we may raise these things almost at any time.

LETTER FROM NEW YORK.

New York, Dec. 27th, 1870.

Friend Horticulturist:

I have received your two initial numbers of "*The California Horticulturist*," and perused them with more than usual care and interest.

They are indeed a great credit to you, both in style and contents—able, practical, tasteful, dignified, and appropriate to the necessities of your portion of the U. S.

I am surprised to see how well you have done your work, and in candor must admit, that your publication, in value and literary interest, is equal to anything published here in the East.

Our field here being wider than yours, and having better facilities of correspondence and publishing, perhaps we enjoy some advantages and a larger circulation than one like yours would possess, devoted to the needs of a single section; but I am gratified that a Horticultural Journal is started on the Pacific coast, and has the prospect of so good and successful a career.

I am constantly "on the wing," traveling into all parts of my native country. Two weeks out of four, I am away from home seeing the best of life and business, and scenery, and learning all I possibly can of the native wealth and advantages of the different States.

Among all my trips, I esteem with special pleasure, the short stay I had in California. It was an event of a lifetime, and our party were met with so many kind attentions from voluntary friends, that we all cherish the most agreeable memories of California hospitality.

I was pleased above all things with your climate. The glorious *sunshine*, so full, so free, so overwhelming in its brightness, and unchanging day after day. No clouds, or storms, or rain, or cold; it seemed almost a Paradise to our everchanging Eastern weather. Then

again, I admired the wonderful ease with which foreign plants, either from the tropics, or sub-tropics, or from China, Japan, or the East Indies, became adapted to your climate and soil, and grew with such amazing rapidity.

The Acacia with its numberless varieties, and beautiful foliage and habits of growth, was a constant astonishment to all of us. The Monterey Cypress was also interesting, more than equalling some of our finest Spruces here. The Eucalyptus was another novelty that excited our curiosity, while pages of well written foolscap cannot detail how we were captivated with the *flowers*. Bright gems of earth, which bloomed so profusely. Geranium climbing over fence after fence, bespangled with glorious crimson blossoms, and Wistarias, or honeysuckles, clambering up along piazza and balcony toward the upper stories of your houses, were one after another scenes of delight. I cannot use adjectives enough to express all the varying sensations which came across my mind, as I witnessed each new turn in the panorama, for in very truth I could only repeat the famous line,

"Lost in wonder and in praise,"

and then keep silent, feasting my eyes to fullest extent.

What a charming suburb your Oakland is, I admired its tasteful architecture, and the elegance of the surroundings of its many mansions, I could feel equally at home there, as at any of our own suburban towns, and we were doubly pleased at the evidences of such wealth and taste, and refinement, so unexpected to us.

The great Pacific Railroad, now brings the East and West so closely together, that California Horticulture must hereafter sympathize in some degree with our Eastern Horticulture.

We hope to be better acquainted with your best pomologists, your noble hearted gentlemen, always so kindly and genial in their attentions; we want an interchange of knowledge, our eastern horticulturists patronizing your journals, and *vice versa*, your Pacific friends taking an interest in our Eastern advantages.

I anticipate a return to California ere many years, and a better acquaintance with California and her public spirited citizens.

Two new Pacific Railroads are now reaching out their arms toward you. The Northern Pacific is already finished 250 miles; the Southern as much more, each progressing a mile a day, and soon racing at the rate of five miles a day toward the Pacific Ocean. We live in the hope that in less than five years we shall again take our Palace Car from Chicago and go through the fields of upper Mississippi, Minnesota, Nebraska and Oregon, down through the entire length of California, and home by the Southern Pacific through Arizona, New Mexico and Texas. Then we shall see you again and shake hands with all who so kindly ministered to our pleasure before.

Success to your enterprise, and may California help to sustain a journal so worthy as yours.

HENRY T. WILLIAMS,
Editor the "Horticulturist,"
N. Y.

P. S. The remarks of your contributor *Hortus* in his criticism of some botanical mis-spelling in the article on Woodward's Gardens, copied from my journal, might have been tempered a little in charitableness had he known my difficulties when I wrote.

I visited the garden with the rest of the party, and was obliged to see everything and take my notes down in less than an hour. At the Occidental Hotel after my return, I rewrote the article with best facilities within my reach, and despatched it by mail to my printer. As type setters know very little of botany, I was gladly disappointed to see how few errors were made.

When *Hortus* becomes a *traveling horticultural editor* like myself, he will never again find fault with unintentional typographical errors. He must remember we came with kindness, to do justice to California institutions and appreciate her climate, soil and productions. If we were to be criticised for minor deficiencies, I am afraid you would never see the "*like of us again.*"

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

A regular meeting of this Society was held on Saturday, December 31st, 1870, and although it was the last day of the year, when people are engaged in the duties and pleasures consequent upon the birth of a New Year, still the number present was such as to prove the great interest taken by each member in the work of this Society.

After reading the minutes, and ordering the payment of a number of bills, eight new members were elected. On motion of Mr. Miller, (which motion was seconded by Mr. Bolander in a short speech,) F. Von Mueller, Director of the Botanical Gardens at Melbourne, Australia, was elected an honorary member. The action of the Society in this matter, is to be commended. Dr. Von Mueller, is noted for the great interest he has taken in matters of botany and horticulture, both in Australia and California.

On motion, the Society adjourned until Saturday, January 14th, 1871, when Prof. Bolander will continue his lecture on the Coniferæ of the Pacific Coast.

This Society, which is as yet in in its infancy, has made good progress, and it is to be hoped that it will be liberally supported by all classes of our people. It is well to say here, that professional men first of all, should see the necessity of using their most strenuous efforts to make it a success; and in fact we believe, that the public reasonably expect that every man directly interested, or connected with horticulture, shall take an active part in the duties of this Society; by so doing, he furthers his own interests, and will help to bring about a better condition of things in the long neglected field of horticulture.

So far, the Society has been engaged in perfecting its organization; but we have no doubt, that its members will soon bring before the public, matters of general interest and importance.

We candidly believe that those of our horticulturists, who have now all sorts of excuses in withholding their aid and co-operation, will regret in course of time, the neglect of their own interests, and that of a population who only need to be properly informed as to their true interests, in order to take hold and overcome existing difficulties.

We deem it our duty to remove a certain disregard for united action among professional men, and trust that nothing will remain undone to create harmony and good feeling among our horticulturists. Let intelligence and good judgment prevail in so important an institution as the Horticultural Society; the only enemies of which can be ignorance, selfishness and prejudice.

LANDS LYING IDLE.

Not long since we had occasion to visit the foothills at the back of Oakland, Brooklyn, and San Leandro, and were surprised to see the extent of land well adapted for the cultivation of almost every kind of produce. Hundreds of acres owned by rich men, and also hundreds of acres owned by a class who exhibit no disposition to do anything, save what is absolutely necessary to keep them from starvation. A spread of country capable of supporting numerous laborers, and of producing the necessaries of life for a large population, is here lying idle and unproductive. We also noticed that a good supply of water was obtainable for irrigating purposes, from natural springs.

Would it not be advisable for these land holders to consider the practicability of renting out, or leasing some of these lands to occupants who are willing and able to work, and thus make these lands productive. We have no doubt but that men with small capital can be found, who will cultivate these acres to the general advantage; and if such do not present themselves, would it not be a good investment if the owner would advance a few hundred dollars for teams, ploughs, seeds, etc. If reliable men will give their labor to such enterprise, surely the land owner can afford a few hundred dollars, (protected by a

lien on the crops) for tools, animals, etc., which remain his property—his land would thus be improved, and consequently advance in value—and being productive would at least pay the interest on the capital invested, while it would furnish labor to the now idle men, and help to advance the interests of the State. We cannot see how the owner could possibly be a loser.

We appeal to all thinking and intelligent land owners, to give this subject serious consideration, and they will find that on making their wishes public, many able, reliable, steady and energetic men, will be found ready to avail themselves of any legitimate and fair proposition.

Our Agricultural and Horticultural interests, have been neglected too long, let every one do his share towards improving the situation, and we will soon see more prosperous times.

Gladiolus in Bloom—A few days since we saw a scarlet Gladiolus in full bloom on Jackson street, near the top of the hill. This shows that we might have the Gladiolus in bloom all through the year, if consecutive planting was resorted to. The bulbs are cheap, and two dozen planted at the rate of two per month would furnish us with flowers, "all the year round."

Errata.—In our last number several errors occurred in the spelling of botanical names. On page 49 for Araria pyonan, read *Acacia pycnantha*; for Araria Laphantha, read *Acacia Lopantha*; for Tetragnia, read *Tetragynia*; for Leptospormum, read *Leptospermun.* On page 51 for Iscoandria, read *Icosandria*; and on page 59 for P. Sabinana, read *P. Sabiniana.*

Cones of Coniferæ.—It has been asserted that certain seed collectors are roasting the cones of the Coniferæ in order to extract the seed more readily. It is not necessary to say that seeds under such treatment are worthless. S. W. Moore informs us that he receives his seeds in the *cones*, and that he lets nature have its course in extracting the seeds.

Editorial Portfolio.

It is only within the last few years, that the people of California have been willing to recognize this as their future home, and to inaugurate a class of improvements, which shall present an aspect of permanency. In former years, thousands of our population were continually drifting hither and thither, in search of some new *El Dorado*, in which to realize their dreams of a golden fortune. We are now becoming more constant, and beginning to see and understand the necessity of sober, patient industry.

Mining is naturally associated with many evils, not the least of which is excitement, and people in an excited state of mind will not be conscious of their folly, until loss of time and money, brings them to grief. Although excitement is a marked feature of a mining population, the evil is not confined to them alone. It has spread into other pursuits, and, where least expected, into that of Horticulture and Agriculture.

Since more attention has been paid to the cultivation of the soil among us, the producers have been attacked with a large number of special fevers, or excitements. Fruit raising, Bee culture, Hop vine, Sugar cane, Grape vine, Tobacco, Cotton, Silk, Castor oil, Rice, Ramie plant and Sugar beet, have each in turn, been the source of undue speculation. Whenever a plant of special interest is introduced upon the coast, the most flattering report is given by the introducer, and, before he has any particular knowledge of its probable success, he heralds his expectations as accomplished facts, and induces others to embark in the enterprise without inquiry on their part, as to its value or ultimate chance of success.

A few years ago the grape fever set in, and has continued, with more or less virulence, until the present time. We have a large number of vine-growers, but few that understand the making or keeping of wines. The great bulk of wines coming into market here, and at the East, are of an inferior quality, and act as an injury to the wine growing interest of

the State. Grape vines have been planted without regard to soil, aspect, climate, or variety; and although the wine interests of California look bright as far as exhibitions are concerned, yet many of our producers will be disappointed for years to come, unless they make themselves perfectly familiar with all the facts that can insure success. There must be less rage for new varieties, and a better cultivation and care of old favorites.

The silk, or rather cocoon fever, has been raging here for some years; but we fail to see great results of practical value, except some fine displays at our fairs and the drawing of premiums from the *State Treasury*. The same can be said in regard to the Sugar Cane, Hop Vine, Tobacco, Tea, Rice, Cotton, etc. Shall these new undertakings have the same fate? or have the introducers considered all the "*pros*" and "*cons*" in question, and are they determined to follow the thing up, until they have proved a practical success? It is true, that the introducer of a horticultural production new to the country, is to be considered an enthusiast, and he may over estimate the extent of his success; but, even should he fail in carrying the day, others are benefited by his labors, and have less obstacles to overcome.

This same evil of a temporary mania for new things, we find even in the ornamenting of our homes and gardens. A few years ago nurserymen could sell nothing but Acacias; now, the Acacia is a very good ornamental tree, but then there was no reason to plant it to the exclusion of all others. Soon after, Pines and Cypress became the most favored trees, and for a while nothing else could be sold. They are now on the decline, while the Gum trees, (Eucalyptus), are in increasing demand. The nurseryman and gardener are not consulted as to what would be the best tree to plant in a certain locality, for people want Pines and Cypress, or the Gum tree, just because every one else plants them. And so the nurseryman raises them by the hundreds, to supply the universal demand, to the neglect of many varieties better adapted to our wants.

The time has come, when the field of horticulture and agriculture should be cleared of this mania for something new, which seems to be the greatest drawback to our prosperity. Horticulture should not have its new fashion every year; but ought to take hold of facts, and adhere to them, until success is apparent.

We hear at times, complaints that capitalists do not aid new enterprises here, as in the Eastern States or Europe. We cannot see in what way capital could invest safely with us, while our minds are wandering from one thing to another. There is no doubt, but that Silk culture in California can be made a success; but we cannot expect capital to come to our aid, until we produce silk enough to make it an object. We sincerely believe, that the Ramie will also be a success; but unless enough is cultivated to supply manufactories, or to export in large quantities, we cannot expect capital to cooperate. The same can be said in regard to the sugar beet, tea and many other horticultural productions. The present condition of both horticulture and agriculture, demonstrates very clearly, that it is far easier to raise crops, than to turn them into cash. Producers must, we think, see the necessity of preparing a channel for their produce, and taking into consideration, (as a part of their occupation) how they shall present the fruits of their labors to the consumer in its best possible shape, and at as low rates as is compatible with profit to themselves.

Now we do not know of any other remedy for all these evils, except an united action on the part of the cultivators of the soil. There should be the best of feeling between our horticultural and agricultural men; all should work for the welfare of each other, and the country at large. Experiences should be laid before the public, and thus become a general benefit.

In the Eastern States, horticultural and agricultural societies have become necessary institutions; their labors have been, and still are of vast benefit to the country. Here in California, every class of business and industry has its society for cooperation and mutual protec-

tion, but horticulture, which needs a more attentive and watchful eye, constituting as it does the chief resource of our future prosperity, seems to be deficient in these essential points; its representatives doing less for mutual protection than almost any other class of people. It is not alone the cultivator who is to do all this work; all classes must give their aid.

When our people have once conceived the importance of properly developing our resources, and are willing to assist with material aid, as much as lies in their power, we shall have made a fair step towards success. If our agricultural and horticultural societies are compelled to rely solely upon those directly engaged in the cultivation of the soil, they cannot accomplish much. The objects of the societies must be to hold exhibitions, pay premiums, disseminate information, import and distribute seeds and plants, assist emigrants, etc. To do all this well requires funds, and the merchant, banker or lawyer is just as much expected to contribute his dollar towards the maintenance of these institutions—working as they do for the common good—as the farmer or gardener.

We have agricultural and horticultural papers and magazines, whose duty it is to lay before the public all the information and knowledge of importance in their field. They are necessary mediums for all concerned, but, unless these journals are liberally supported by the mass of intelligent people they cannot devote as much time and care to their enterprise as is desirable. California has been liberal in all things; now let her be liberal to herself, and make a united and determined effort for the advancement of her great agricultural interests.

Our friend Chas. H. Hoffman at No. 423 Natoma Street, will always be ready to perform all kinds of garden work in good style. Parties who wish to have gardens laid out or renovated should give him a call.

C. L. Kellogg, No. 427 Sansome Street, offers for sale a splendid lot of California and imported bulbs, and also seeds of all kinds.

Books and Journals Received.—We have received from the house of Orange, Judd, & Co., of New York, The "Practical Floriculture" and "Gardening for Profit;" both of which are written by Peter Henderson. They are books which we can in every way commend to our readers. We have received from the same house, "Harris on the Pig." This work is a most valuable one to all those interested in "pork culture." The price of the above books is $1.50 each, and they can be had at this office. We have also received "The Horticulturist," H. T. Williams, Editor, New York, the "Gardeners' Monthly," Thomas Meehan, Editor, Philadelphia, and the "American Agriculturist," published by Orange, Judd & Co. The above journals are the leading horticultural and agricultural publications of the Eastern States. They are full of interesting matter, relating to the cultivation of the soil, either for profit or pleasure.

Agricultural Meeting.—At the annual meeting of the Santa Clara Valley Agricultural Society, held in San Jose, the following gentlemen were elected to the respective offices for the ensuing year. President, H. C. Wilson; Vice-Presidents, C. Peebles and C. B. Polhemus; Treasurer, M. Schullenberger; Secretary, Tyler Beach; Directors, W. O'Donnell of San Jos , and J. P. Sargent of Gilroy. The Treasurer's Report, gave as a cash balance on hand the amount of $39.38. It was ordered that the Secretary have 500 copies of the Constitution and By-Laws printed, and also a list of the life members.

Dreer's Garden Calendar for 1871.—This little work is before us. Besides the catalogue of seeds, new varieties of vegetables and flowers, it contains valuable information for their proper cultivation. It is well illustrated. See advertisement on another page.

Ellwanger & Barry, Rochester, N. Y.—It is with pleasure that we refer to the advertisement of the above named firm in this number of our journal.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

VOL. 1. FEBRUARY, 1871. No. 4.

GERANIUMS. (*Pelargoniums.*)

If we were to say that Geraniums are not cultivated in our gardens and green houses, we would undoubtedly surprise many of our readers. Yet botanically speaking, this is nevertheless a fact. The class of plants cultivated, and known by florists and gardeners, as Geraniums, are really Pelargoniums according to botany, although Geraniums and Pelargoniums belong to the same order, that of Geraniaceæ, which order comprises also the Erodium and Monsonia.

However, the term "Geranium," is used so universally and we are all so familiar with the name, that it would be contrary to our policy, if we did not adhere to the same term, and we feel therefore, justified in heading this article as above, Geraniums.

Of the Geranium proper, we may as well state here, there are a number of varieties, some of which have been cultivated in the gardens of Europe, but we believe they have disappeared entirely from the catalogues. These Geraniums are natives of the northern temperate regions.

The Geraniums, known as such by all of us, are the results of floriculture, which by the art of hybridizing has brought our flora to its present perfection. We shall confine ourselves to this class of plants, as one of the most valuable in our gardens, conservatories, green houses and parlor windows, independent of the botanical terms and classification. The native countries of the Geraniums, so-called, and from whence all the sorts in cultivation have had their origin, are the Cape of Good Hope, and Australia. The number of species is over sixty, and out of these so many varieties have been produced that it is difficult to classify them all.

All the Geraniums seem to thrive well in California, in the open air, and only in the extreme North do they need protection during winter. In San Francisco, and in localities of a similar climate, they form one of the chief attractions in the gardens, blooming in profusion throughout the year. Even after the unexpected heavy frosts we had during the latter part of December, we find them unharmed and flowering profusely at the present time.

The most popular distinction made by florists in the classification of Geraniums, is as follows:

1. Scarlet Geraniums, of which the original is probably *Pelargonium inquinans*; produce flowers from a pure white, to a brilliant scarlet, in all imaginable shades. There are over 150 varieties, of which the most frequent with us here is the common Scarlet, found in almost every yard, and therefore not considered a great ornament. However the more improved varieties are a most desirable class of flowering plants for pot culture, for the flower garden, or as bedding plants for the lawn.

2. Double flowering Geraniums, these really belong to the Scarlet Geraniums, but they form such an important and interesting acquisition, that they are generally treated as a class by themselves. With us here they are yet novelties and rarities; in Europe and the East they are now becoming plentiful. There are probably not over 25 specimens of Double Geraniums cultivated in California by private individuals, while the nurseries have also but a limited supply on hand. We hope that a few years will bring them into general cultivation. The immense and gorgeous heads of flowers, containing sometimes from 75 to 100 well developed and very double blossoms, are of long duration. Some of the best varieties are the Andrew Henderson, (not in cultivation here yet), of a deep scarlet lake; Gloire de Nancy, a beautiful scarlet, very double; Triomphe, Rose Queen, Conqueror, (full rich vermillion flowers, with conspicuous white eye); Victor, (bright orange scarlet with white stripes); Double White, (a pure white double, very beautiful); and many others equally as good.

3. Variegated leaf Geraniums (horse-shoe Geraniums), or *Pelargonium zonale*, (zonale Geraniums), very much esteemed for the peculiar coloring and shade of their leaves. Some of the new varieties are most exquisite, but they are rare with us yet. They are again divided into Golden, Bronze, Tri-color and Silver variegated.

4. Ivy leaf Geraniums, (*Pelargonium peltatum*), of a climbing habit. They are well adapted for Trellis work, Hanging baskets and Wire frames. The flowers are from a pure white to a purple crimson, and while the foliage of some is of a glossy green, others have golden variegated or silver edged leaves. They bloom luxuriantly with us during summer and winter, and form a most striking appearance in many of our gardens just now.

5. Pelargoniums, known by their large flowers, the upper petals of which are marked with dark blotches. They are generally subdivided into Show Geraniums, which are of a more robust growth and produce large showy flowers, and the Fancy Geraniums, of a more dwarfy growth and producing smaller flowers. These also bloom with us freely during summer and winter in the open air. They are too well known to require recommendation; the number of varieties is almost endless.

6. Sweet-scented Geraniums, the most of which are well known for the fragrance of their foliage. The most popular varieties are the Nutmeg scented (*Pelargonium odoratissimum;*) Rose scented (*pel. graveolens;*) Mint Geranium (*pel. radula;*) Lemon scented (*pel. crispum;*) Peppermint scented (*pel. tomentosum;*) Oak leaved (*pel. quercifolium;*) Apple scented Geranium etc. While the flowers of these Geraniums are insignificant, a bouquet is hardly complete without some leaves of the Rose scented or other sweet-scented Geranium.

7. Bulbous-rooted Geraniums, from the Cape of Good Hope, which deserve a place in a collection for their peculiar colored flowers. We mention the *Pelargonium melanonsthon* which produces flowers of a blackish color; *Pel. triste*, with flowers of a brownish green, etc. The flowers are fragrant towards the evenings only. To my knowledge there is but one plant of this kind here, it is cultivated by Mrs Bell, near the North Beach. It has flowered well for two years past and is rather a curiosity.

From year to year, new varieties are produced by Hybridizing, differing in character and habitus from the above named varieties, so that it is next to impossible to give even an approximate idea of the number existing.

As indicated before, the cultivation of Geraniums with us in California is so successful and easy, that it requires no particular instructions from the florists. They thrive best in a light sandy loam, and they require more sun and less moisture than the average of flowering plants. If cultivated in pots under glass, they should be watered sparingly during the winter season and be well drained; they should have plenty of fresh air and all the room possible, so as to obtain bushy and compact specimens; it is well to turn the plants from time to time so as to expose all sides to the strongest light and prevent the plant from

growing one-sided. As soon as the roots appear numerous on the outside of the ball of earth, they should be transplanted into a larger pot. Young plants are always preferable, in as much as they are raised without any trouble, We do not advise keeping Geraniums over two years old in pots; but if it suits convenience to keep them longer, turn them out of their pots, shake the earth off the roots, cut back branches and roots and plant again in a smaller pot. In this way the plant may be kept in a growing and continuously flowering condition.

Geraniums are well adapted for groups on the lawn, particularly the scarlet; yet we do not see much use made of them for that purpose. In England they are very extensively used in this way, although there the plants have to be taken up during winter; how much easier can we make use of them for the same purpose when the plants can remain out during the winter and when they flower as freely during this time as they do during summer.

A bed filled with scarlet Geraniums, the larger plants in the centre, enclosed by a belt of silver leaf Geraniums, and finished off by a border of Boxwood, would certainly produce a good effect. The more general cultivation of the choice varieties of Geraniums is very desirable.

CALIFORNIA MILK WEED.—The idea of milk weed being made an article of commerce will be new to most of our readers. Nevertheless, it is one worthy of attention. A circular from a produce broker of Liverpool, under date of November 25th, says: "There can be no question that this article, now allowed to run wild and uncollected in the State of California, can readily be made a valuable article of commerce, competing with many other fibres now in use. With cotton so dear, our demand for fibrous material of any kind is almost unlimited, and I append the value of some of them, in American currency, in evidence of what milk weed would have to rival: Hemp, East Indian, per ton, 2,240 pounds, $156 to $390; Jute, East Indian, $90 to $135; Istle, or Mexican fibre, $250 to $300; Palmetto leaves of America, $240 to $250; China grass from Japan and Mexico, $240 to $300; Flax, $167 to $420. Now, if milk weed grows wild, and can be gathered in any quantity at discretion; if the fibre is as strong as hemp, or only equal to some of the others named; and if it can be mixed for the manufacture of linen, or spun in imitation of the Japanese silk, like the China grass, etc., it is indisputable—as the California papers state— that there is a fortune in the gathering of this weed and its exportation to this country, and the sooner it is begun the better. The value may even exceed any of the above."

THE OLIVE TREE (*Olea*).

Some time since we saw a letter in the *Alta California*, describing the usefulness of the Olive, which seems to thrive well in our California soil and climate. We extract from the letter the following:

"The olive tree has flourished from time immemorial, along the shores of the Mediterranean Sea, although at the present day it is chiefly cultivated in Italy, the south of France, and Spain. In these localities it commences to produce fruit at the second year, and arrives at maturity at about the sixth year. It is propagated from layers. These are cut from the parent tree in January or February, and planted in trenches about a foot apart, and transplanted the second year. The trees should then be planted about ten feet apart, and in the manner usually adopted in transplanting fruit trees in this country. They grow more rapidly in moist bottom lands, but the olives are said to be better which grow upon hillsides. In this State, the fruit ripens in January or February. The yield varies in different years, a full-grown tree producing, upon an average, from fifty to seventy-five gallons of olives. One tree in the old Mission gardens in San Luis Obispo, produced in 1868, one hundred and ten gallons of plump, ripe olives. In this State, a tree will generally produce olives in the seventh year. The writer has seen several trees, now in their fifth year, which, without any extra care, produced from six to ten gallons of olives each.

The old Franciscan friars, who founded the Missions in this State, planted a large number of olive trees in several of the southern counties, many of which, in San Luis Obispo, Santa Barbara, Los Angeles and San Diego counties, are still living. These have produced abundant crops for many years, and the fruit is said to equal in size and flavor that produced along the Mediterranean.

From these trees the friars obtained all the oil which they used in the church and for domestic purposes; but, after the secularization of the Missions by the Mexican Government, these orchards were neglected, many trees

were destroyed, and the manufacture of oil abandoned. A few olives were gathered each year by those who wished to preserve them for their own use, but the majority of the trees were suffered to decay. In San Luis Obispo and San Diego counties, however, at the present time, the olive orchards have been leased from the church, and oil is being produced in considerable quantities and at remunerative prices. The process used for obtaining the oil is of the simplest character; indeed, it is the same which was used a generation ago by the old friars. It consists of two circular stones, resembling in size and shape those used in flouring mills. One of these is placed horizontally on the ground; the other rests vertically upon it. A vertical beam revolves in an aperture in the centre of the lower, or horizontal stone, having two horizontal arms; to one of these the vertical stone is attached, which revolves upon the surface of the lower stone and upon its own axis. The other arm is used in propelling the machine. The ripe olives are thrown upon the surface of the lower stone, and are crushed by the weight of the upper one as it rolls over them. The pulp thus formed is placed in a press, and the oil and water together forced out. The water is drawn out from below and the pure oil remains behind. Some idea of the revenue to be derived from olive culture may be had by instancing the fact that in 1868, from 100 trees, young and old, in the Mission garden in San Luis Obispo county, upward of 3,000 gallons of olives were gathered. These, at the rate of ten gallons of fruit to one of oil, (the common rule,) produces 300 gallons of oil, which readily sold for $4.00 per gallon, making the very comfortable sum of $1,350 as the labor of three men for about six weeks. Olives fit for pickles, sell for 75 cents per gallon."

To the best of our knowledge there are four varieties known of the olive.

1. *Olea Americana*, (American Olive,) a native of South Carolina and Florida. The flowers are fragrant, of a white color, the fruit is round and of a beautiful purple hue.

2. *Olea Europœa*, (Common Olive,) is a native of the southern part of Europe and northern Africa; it is undoubtedly the variety the correspondent of the *Alta* refers to.

3. *Olea capensis*, a variety of which we know but very little.

4. *Olea fragrans*, (fragrant Olive tree), a native of China and Japan. This tree is highly esteemed in its native country, for the extraordinary fragrance of the flowers, which are used to flavor tea.

The Olive tree thrives best in leaf mould, mixed with sand and loam, although they are known to do well, according to the above correspondent, in other soils. They are propagated by layers, cuttings, suckers and seeds. The cuttings should be planted in pure sand, under glass, and a little bottom heat may be advisable. The seed should be sown immediately after ripening, and may be sown under glass, the seed will not germinate before the following year.

The Olive is a beautiful ornamental tree, its foliage is of a dark green color above, and greyish white beneath. The tree grows, in its native country, to the height of twenty feet. We are in favor of cultivating the Olive tree more extensively in California, but as the tree does not seem to be remunerative here before the sixth or seventh year, it would not be advisable to depend on a plantation of Olive trees alone. However, where orchards or ornamental trees are planted, we see no good reason to neglect the setting out of a certain quantity of Olive trees in the same plantation.

A WRITER in an English journal suggests the use of ordinary sulphuric acid or oil of vitriol, as an excellent agent for the destruction of weeds on lawns. The difficulty of eradicating such unsightly elements of the lawn is well understood, since to do so satisfactorily requires the removal of a large amount of dirt, producing a corresponding injury to the general appearance. By taking the acid in question and allowing a few drops to fall into the crown of any obnoxious weeds, it will turn them brown in an instant, and ultimately cause the death of the plant. Great care must of course be taken to prevent any of the acid from falling upon the skin or any article of clothing.

AN orange tree in Carson City, Nevada, is bearing fruit.

GLIMPSES INTO THE WORLD OF PLANTS.

TRANSLATED FROM THE GERMAN.

Continued.

Plants have instinct, which increases almost to an expression of passion. They have an aptitude for flourishing; they show vitality in combatting the elements; in one word, they have a decided will for life. They turn away from everything disagreeable, and all dangerous influences and neighbors, and show a longing desire for air and light, for water and substantial nourishment. They anticipate and scent these, and will send their foragers to them at long distances; never at random, but always direct to the desired point.

Why should this not astonish us, when similar acts in animals can scarcely be explained. We once bought a lot of crawfish; as usual, they were put into a wooden tub, and for the time being, covered with nettles, a habit which we could never understand; perhaps it is done to accustom them to death in the kettle. One of our prisoners must have escaped by a bold jump, and had started on a tour of discovery for water. At a distance of some thirty yards was a well, and some forty yards from that a pool of dirty water. Now instead of going to either of these, our sensible friend passed on towards a small clear lake some sixty yards further off, and had in a direct line almost reached this goal after a tiresome march of twenty-four hours, when he was found by some one, who of course now forwarded him much quicker.

If such instinct as to distance, such sagacity in selection, appears to us wonderful in an animal of a lower class, what shall we say to the instinct of plants.

We once found in the depth of a large forest, a pine tree on the edge of an erratic granite-block, about the size and height of a dining table for 8 or 10 persons. Entirely against the nature of the pine, the tree had grown a very thick tap root, which continued the trunk downward and entered into the ground. With this the subsistence of the tree was assured, but not the stability; nothing was done to resist the power of the storms. The taller the tree grew, the more it was exposed to the wind, and the more necessity it had to secure itself. It now sent roots uncovered right across the stone in all directions, and these, looking like red snakes, lowered themselves perpendicularly to the ground, as soon as they reached the edge of the table-like stone. These roots, which in time radiated, could not yet give sufficient stability to the tree, it was necessary to send one, and that too the thickest, directly opposite to the main root, right across the granite table a distance of ten feet, and thence to the ground. By this the tree was perfectly secured, and had not only clasped the stone as we would use our five fingers to lift an object, but had the points of these fingers embedded in the ground, and thus firmly attached to the stone. But even this was not yet enough, for, although the subsistence and stability of the main plant, was thus provided for, its feeders, which had almost become air-feeders, now needed a different covering from that which they would have required in their ordinary condition as roots under ground. They had to be protected against the inclemency of the weather, against snow and ice, and this also the plant well understood how to do. All these roots, so far as they had come in contact with the air, were provided with a very thick red-brown rind. Thus we find here perfectly conscious acting.

Here is another example of the instinct of plants. A farmer noticed that some elm trees, growing by the roadside, sent their roots into his wheat field, and robbed it of its best fertility. To obviate this, he dug a deep trench between the elms and his field, and all the roots, found running in the latter, were chopped through. However in vain. The severed roots now struck downward on this side of the trench, reached the bottom, and undermining it, passed through the clay and came up on the other side of the loam, and had thus regained for themselves their former domain, the wheat field. Who taught them to take this tiresome circuitous path through hard and uncongenial layers of clay? Must we not look at this action with a feeling of awe and aston-

ishment? At any rate our farmer did not make a second attempt; the elm trees with their knowledge amazed him, and he resigned to them that strip of his wheat field.

With such demonstrations, shall we not ask: How, if the plant has after all a kind of soul, a feeling? How, if after all it *does* hurt the rose, when we pluck it. And are we assured, that the life of the plant ceases, when we sever it from the ground. In the timber, which cracks and creaks, in very cold weather, may not a continuance of life co-exist with the general nature, as with wine, which ferments again, when the vines bloom.

Goethe tells us of a case, which well may make us think and reflect. Two sisters had received as wedding presents, tables made of wood taken from the same tree. They lived at places, a few miles distant from each other. One day there was company with the elder one of the sisters, and refreshments were taken with open doors, when all at once the table in the corner cracked with a loud noise. After a few hours news came that they had had a fire in the house of the younger sister. The remark was made in fun, that the table had already announced it; and sure enough, particular inquiries being made, it was found that at that exact time the other table was burned. It is very easy to say, it was an accident, or Goethe is a wag, a story teller. Instead of saying so, or rejecting it entirely, it would be much more sensible to study into these things. If we accomplish nothing more, than the relinquishing the habit of thoughtlessly plucking or mischievously destroying plants, by endeavoring to substantiate a soul in them, something will have been gained. We have societies to prevent cruelty to animals; why of all plants are the garden flowers, and forests trees the only ones protected. This is from selfishness. We know of a Russian peasant, who was sent into the army, as a punishment, for having cut down two young maple trees in the park of his master. It is said that in Ireland, in ancient times, the cutting down of trees illegally was punished with death.

Instinct taught mankind the beneficial influence of trees, long before science proved it. Indians consider old trees holy. It is senseless for them to destroy young trees, and at the same time reverence old trees.

The desire for light is alike in all plants, for the light is the means of change of nourishment; without light no plant will ever arrive at a perfect development. A seeming exception to this is the compass-flower, which, like the magnetic-needle always turns to the north. The sunlight is too powerful for her, and her pointing to the north has often been of service to lost wanderers. In the region of changeable weather, we well know, that each tree serves as a guide, as on its west side through the frequent rain, the moss grows more, than on the other. This circumstance also influences the texture of the wood, and a good carpenter can easily tell from which side of the tree his boards come. Here we may say, that the mechanic can often teach the professor. To workmen in foundries, it was long since known, that white heated liquid iron could be touched without danger to their hands. A carpenter's apprentice drew our attention to the fact, that wood bored from the end never breaks, but that it will, when the gimlet works at right angles to the fibres. Of a woman working in human hair we learned, by feeling alone, without microscope, to find the peripheral end of the hair; and of a dealer in quills we heard, that by knocking the quills against a table, we can arrange them in their original order, as they grew in the wing. Werner, an eminent geologist, in his wanderings, liked to converse with the peasantry: "Because one can always learn something of a peasant."

Above we stated, that the compass flower always turns away from the sun. The sunflower on the contrary, as if in love with the beautiful sun-god, invariably turns herself towards the sun. Besides this habit, the sunflower is remarkable for its influence on whole districts. Are these wet and marshy? an extensive planting of sun-flowers quickly dries them, and pays well, besides, by a large yield of oil.

Light we said is a necessity for the life of the plant. Who has not seen potatoes sprout? When these, being locked up in cellars, feel the

approach of spring, they send their shoots directly to the light, struggling for air and light, and freedom. The house-wife in bad humor, will, perhaps say—"The potatoes commence to sprout." She speaks very hard of these poor prisoners, and does not think of the wonders of this appearanee.

With a feeling of curiosity, mingled with awe, we look at the Venus fly-trap, (*Dionæa muscipula*) how quickly she eatches each thoughtless inseet by folding her leaves, which she does not open again, until the animal is dead.

Can a human being be more sensitive, than the Mimosa, (*Mimosa sensitiva* or *Mimosa pudica*). A mere nothing makes her tremble; a small eloud hiding the sun disturbs her; the lighest wind makes her uneasy, and quiekly she folds herself up. She rolls up her leaves, when night eomes on, and opens herself again with the first dawn of morning. In the tropies we find large plains covered by these sensitives, whieh, notwithstanding their numbers, do not show the least partiele of courage. The gallop of a horse frightens them; the nearest flowers close themselves, and the rest warned by their sentinels, follow immediately. They hang their heads most anxiously, when a wanderer approaches them, and should he insult but a single flower by touching it, an electrieal movement will go through the whole field; they all take alarm, and all feel the attaek. They are as susceptible as we to the influence of nareoties; a few drops of tineture of opium seattered over them, is sufficient to quiet and make them go to sleep. We even suceeed in making them trust us by instruction and habituation. The botanist, *Desfontaines*, had placed one of these sensitives in his wagon, it folded itself quiekly. However, the wagon went on, and as nothing further was done to the plant, it became quiet in time. When the wagon however at last stopped, and the moving eeased, the plant once more got frightened, and carefully shut itself up.

The plant shows a singular life in her most splendid development, an approaehing and rising up to that complexity of appearances, which in one word we call soul. To study this soul of the plant, in fact to learn to respeet this vegetative being, and to nurse it for itself, and not solely from selfish motives for the gratification of the eyes, or to while away the time—this it is, to whieh these hurried glimpses into the world of plants should invite us, and to this end we hope for success.

R. Wegener.

SKETCH OF SOME OF THE TROPICAL FRUITS LIKELY TO BE WORTH CULTIVATING IN CALIFORNIA.

As it has been demonstrated lately by a nurseryman, residing near this city, that the Guava tree, of the strawberry variety, ean be grown sueeessfully in this State, some deseription of that tree and fruit, as well as some others of the tropical fruits, whieh can probably be made to suceeed in this climate and soil, may be worthy of our eonsideration. Of the Guava there are two distinet species, both of whieh form in their growth rather small straggling trees; the one is ealled *Psidium piriferum*, or the Pear-shaped, and the other *Psidium pomiferum*, or the Apple-shaped Guava. They are eommon in both the East and West Indies, where they are eultivated for the sake of their fruit, which is eaten either raw or preserved. In the latter ease the rind forms the Guava marmalade, and the entire fruit perhaps the finest jelly in the world. In the East Indies, however, they are not so mueh esteemed as in the West Indies; where they are ranked among the best fruits of the Islands.

In *Psidium piriferum*, the leaves are elliptical, and the flowers solitary. The fruit has the form and size of a middle-sized pear; when ripe it is of a light straw eolor, with a pale, soft, sweet pulp, eontaining a considerable number of small seeds. It is in perfection before it is quite ripe, and if gathered early in the morning, before the sun has shone upon it, the flavor is mueh brisker than when plucked at mid-day. It is frequently eaten with wine and sugar.

Psidium pomiferum differs from the *P. piriferum* in having square shoots, and more lanceolate leaves. The fruit has always a dark grass

green color, and, before maturity, is dashed with a tinge of red, which afterwards disappears, it is quite round, and not bigger than a large plum. On the outside it is a little rugose and tuberculated. Its flesh is very firm, and the skin thick; but the flavor is more grateful than that of *P. piriferum*. The tree always grows in the worst soils. The pulp is sometimes mixed with cream by Europeans, to imitate strawberries.

In the West Indies, of each of the above kinds there are two varieties, the one with red, and the other with white fruit; those of the pear-shaped or perfumed species are the most highly esteemed.

Among the fruits of the West India Islands, are some which can bear a comparison with the most exquisite production of the Old or New Worlds. To those who are disposed to attempt the cultivation of these fruits, every inducement is offered if the plants can be procured, as specimen trees of the best of them, already exist in some of the tropical plant houses of Europe, and the East of this country, and in all probability in many locations in California, they would succeed, and bring a remunerative price for their cultivation.

Of these fruits stand highest in estimation after the Guava, the various species of *Anona*. The true Custard Apple, (*Anona reticulata*), is produced by a small weakly branching tree. The leaves are ovate-lanceolate, with a long point, and the flowers yellowish green. The fruit is as large as a tennis ball, or somewhat less, of a dull brown color, and divided on its outside, into numerous irregular spaces, or areolœ, from which its name is derived. The flesh is soft, sweet, yellowish, or reddish, of the consistence and flavor of a custard. The Sweetsop (*Anona squamosa*), is a smaller tree than the last. Its skin is half an inch thick, containing an abundance of thick, sweet, luscious pulp, which is said to be like clotted cream mixed with sugar. The Soursop (*Anona muricata*), is a moderate sized tree; the pulp of the fruit is of a soft pithy substance, as white as milk, and of a sweet taste, mixed with a most agreeable acid. All of these are common in the collections of tropical houses in Europe.

The Avocado, or Alligator Pear (*Laurus Persea*), is borne by a tree of the size of an ordinary apple tree. The fruit is as large as a pear, and is considered one of the most delicious in the world. It has a delicate rich flavor, not unlike a peach, but much more grateful.

China and Japan possess some fine fruits, some of which would no doubt do well here. The Loquat (*Eriobotrya Japonica*), a small sized tree, is sufficiently well-known to render any account of it unnecessary. The Longan or Long-yen, and the Li-tchi, two species of *Dimocarpus*, are held in high estimation in China and Japan, and would be well worthy of a trial in California. It is said that the trees bear fruit much more quickly when raised from cuttings, than they do if raised from seeds, requiring eight or nine years in the latter case, and only three or four in the former.

The Kaki (*Diosperos Kaki*), is another fruit from China, there is little doubt it would repay the trouble of cultivation. The fruit is the size and shape of an apple, with a reddish orange colored skin; the flesh is semi-transparent, brown, soft, and pulpy, with a most agreeable honey-like flavor. In the inside are several hard seeds. Of the varieties the chief are:

1. *Ono Kaki*, of which the fruits are like an orange; being dried in the sun, and mixed with sugar, they are preserved and sold as figs.
2. *Kineri Kaki*, of which the fruit is not fit for drying, but must be eaten fresh.
3. *Ssibu Kaki*, which is not fit to eat.

E. J. H.

Galled Backs on Horses.—Relative to galled backs on horses, *Wilkes' Spirit* says: If the back is considerably swollen it should be well fomented for at least half an hour, and then bathed with a lotion composed of two drachms of Goulard's extract and one ounce of glycerine in one half a pint of water. The saddle should never be re-applied until the sore is healed and the skin is free from all inflammation, even if considerable inconvenience is thereby suffered. The best paliative we know of consists in placing a green cabbage leaf over the bruised part, and keeping the saddle on an hour or two after work.

THE PRIMROSE, (*Primula.*)

These beautiful and modest little flowering plants, have their home in the highlands of Europe and Asia. They put forth their blossoms in the earliest days of spring, and from this habit they derive their name; *primus* (first.) There are about forty varieties enumerated by botanists, of which but few are usually cultivated, but these few have been so much improved by cultivation, that the varieties now found in the gardens are very numerous.

It will answer every purpose here, to refer only to such varieties as deserve a place in every collection of flowering plants.

1. The *Primula veris*, of which the best varieties are the Cowslip, the English Primrose and the Polyanthus. The English Primrose is universally considered the finest in form; its flowers are of a pale yellow color. The Polyanthus is much more extensively cultivated, the flowers are either single or double and of various shades and colors. They do well under ordinary treatment; are well adapted for a border, and are propagated from seed or by division of the roots.

2. The *Primula auricula* bears a flower of great beauty. We are sorry to see them neglected in our gardens; but few plants are cultivated here, and we cannot assign any other reason for their absence from our gardens, except that they are not known by our flower loving people. The flowers are fragrant, of a velvety color, and beautifully shaded; their leaves are also beautiful, and of a pale green velvety color. They are well adapted for pot-culture, are hardy, and prefer a shady place with plenty of moisture. The soil should be a rich, light loam, mixed with old manure. They are natives of the Alpine region of Germany and Switzerland, and are propagated by seed, and from offsets which take root quickly if kept in the shade.

3. *Primula Chinensis* (*Sinensis,*) Chinese Primrose. These are natives of China, and are not adapted to out-door culture. They bloom freely with us under glass, and are very desirable house plants. Unlike the other primroses, they require sun, and if properly managed flower all the year round, although their most flourishing season is from the present time until spring. All that is necessary for their cultivation is a moderately warm situation, close to the glass, medium moisture, and good drainage, which is secured by filling in the bottom of the pots with broken pieces. It is not well to sprinkle the plants with water, as the leaves and flowers will be speckled easily and soon decay. The leaves and flower stalks seldom grow higher than about six inches, and, if the plant grows top heavy it should be supported by a few little sticks placed near the collar of it. As the plants do not flower so well after the first year; it is therefore advisable to procure young plants every year, or to raise them from seed. This however, is not easy, the seeds being very fine, if carelessly watered, or allowed to dry out, they will be lost. In sowing the seeds, care must be taken to cover them lightly with the soil, or what is better not to cover them at all, but to press them gently into the surface of the soil with a smooth piece of wood. The watering should be done by saucers placed underneath the pots, or by very fine sprinklers, so as not to wash the soil, but even after the young plants have developed two or three leaves, they require careful watering; if the soil is permitted to get dry, the very tender roots may be dried up in a few hours. The propagation by offsets is not very practicable, unless bottom heat can be applied. Our way of treating the seeds is this, we water the lower body of earth in the pot by a saucer, and cover the surface from time to time with a wet cloth, so as to leave the seeds undisturbed.

Of the Chinese primroses, we have now some most beautiful varieties, double and single; the double white is certainly a beautiful plant, although it does not bloom so continuously as the others. The fringed flowers are considered the best, and we certainly concur.

For a neat flowering plant in the window, there is nothing which will repay so well for the space occupied, as one or two of the Chinese Primroses.

For out-door pot-culture, we know of nothing handsomer than the *auriculas* although their regular flowering season occurs but once a year. After they have finished flowering they are satisfied with any shady out of the way place.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION IV.

Landscape and Ornamental Gardening is a peculiar art, (we say art because there is nothing in Horticulture which demands more refinement and taste), but it does not seem to be generally recognized as such. Almost every one who is about to lay out a garden, thinks that he knows all about it, and he considers that all that is necessary, is to employ some one who knows how to handle a shovel, and to set him to work under his own supervision. He pumps his neighbors, and reads a book on the subject, and so the work is carried on. There is another class of men who wish to employ a good gardener, and make use of his advice; not because they are ignorant in regard to the work, but because they either have no time, or they think it beneath their dignity to appear to know anything about it. And there is still another class who are perfectly honest about the matter, and see the urgent necessity for employing men of knowledge and good taste, but we are sorry to say these are but few.

To those who feel disposed to improve their grounds, whether small or extensive, in an artistic manner, and in accordance with their means, and who desire to have their work done well, we will endeavor to give such advice, as will aid them in the execution of their design. We are necessitated to differ to some extent from the rules of Gardening, adopted in other countries; as our soil requires peculiar treatment, and our climate admits much greater latitude.

In order to facilitate our work, and to be more easily understood, we will classify Ornamental grounds into first, second, third, and fourth rate gardens, of which the latter are of the smallest dimensions, and are usually connected with city residences. Such a garden may be from 100 to 150 feet in length, and 50 to 100 feet in width. Unless the soil consists of loam, it will be necessary to add, if clayey, sufficient loam to work up well, or if sandy, sufficient to give it strength. In all cases a good quantity of old rotten manure should be added and well incorporated. All this should, if possible, be done in the earlier part of the rainy season.

Before laying out the ground, gas and water-pipes should be laid down and proper drainage provided, to carry off waste, and rain water; if there is any intention to use clothes-lines, posts should be made fitting into sockets, which should be secured in the ground, even with the surface, so that the posts may be inserted into these sockets when needed, and removed again afterwards. Never permit clothes lines to be fastened to trees, tree poles, fences etc. The proper place for these poles is in the rear of the house, and near the intended walks, so that the clothes lines may be reached by standing on the walks.

Outhouses should be so located, that they may be hidden by trees and shrubs.

The laying out and planting of a garden of this kind, is necessarily influenced materially by the position of a house, and other local circumstances. There will of course be sunny and shady places, exposed and sheltered spots, and on these circumstances will depend a great deal what plants are best adapted. Sun is required for the successful growth of most plants, particularly for flowering ones, we therefore object to high fences, or too many shade trees in these smaller gardens.

The next consideration is, whether the owner wishes a garden which requires but little labor to keep it in order, or whether he wants one which will afford him pleasure in spending a few hours, during the day or week among his flowers. He may want a large grass-plot for his children to play on, or he may prefer gravel for the same purpose, which requires less labor.

If a house is built to be rented out, all that the owner requires may be to give it a neat appearance, in order to obtain a tenant. In this case he will not do the work so thoroughly, and a few cheap plants may answer his purpose.

But where a garden of the above dimensions, is laid out and planted for the purpose of affording recreation to the owner and his family; when it is the desire to display shrubs, trees and flowers, or where a green-house or other embellishments are desired, the work must be done well, plants must be carefully selected, the advice of a good gardener is indispensable, and will invariably repay the owner for the outlay.

Now let us see what plants should be selected for the garden of a city residence, say of 100 feet in width, and 150 in depth. In this selection, we will confine ourselves to plants which can readily be obtained at our nurseries at reasonable rates. There are perhaps many equally good varieties to be obtained which we do not mention, but our readers must bear in mind that as only a limited number of plants are wanted for a place of this description, we only mention those which we consider best for present purposes.

Climbers are desirable for different uses, for instance we would recommend for training against the upper part of a house in a sunny exposure, the *Wistaria Sinensis; Passiflora*, (Passion Vine); *Tecoma*; Yellow and White Jasmine; *Solanum jasminoides; Maurandia*, etc., while for the lower part of the house we prefer Fuchsias, Heliotropes, *Sollya heterophylla; Tropaeolum peregrinum*, (Canary bird flower). To the shady side of the house, the Ivy, Virginia creeper, *Cobaea scandens*, etc., are better adapted. For training against fences, outhouses and covered seats, we are in favor of Honeysuckles, Clianthus, *Lophospermum*, *Bignonia radicans*, Climbing Roses, Ivy leaf Geraniums, Australian pea vine, and others.

In the front garden, in the center of a larger bed, for instance, some display should be made of a few plants remarkable in their character. If a flowering shrub is desirable for this purpose, we are in favor of the *Viburnum opulis*, (Snow-Ball); *Cydonia Japonica*,(Japanese Quince), *Philadelphus grandiflora*, (Mock Orange); *Syringa vulgaris*, (Lilac); the double-flowering Almond, the *Polygala*; *Plumbago*; *Cratægus*; *Mahonia*, (Berberis); or the *Laurustinus*, which, although common with us, is nevertheless very good. Some evergreens and ornamental foliage plants, are also well adapted for the same purpose, such as the *Aucuba Japonica*, English Holly, *Pittosporum nigra*, golden and silver leaf *Euonymus*; *Juniperus funebris*; *Cordyline*; *Dracaena* and *Yucca*. If the front garden should be unusually large, a *Brugmansia*, (*Datura*), Pampas-grass and *Tritoma uvaria* may be desirable, although we are inclined to believe, that these last named plants are much better adapted for the lawns of more extensive grounds.

We do not approve of many shade trees in a garden of this kind, although in some instances, they may very appropriately be placed there. Care should be taken, however, to plant them, so that they will not obstruct the sun too much. In accordance with our objections, we shall mention but few, such as the *Acacias*, (different varieties), the Pepper tree (*Schinus molle*), *Laurus nobilis*, *Laburnum*, (Golden chain); *Cryptomeria* and *Cassia tomentosa*, (Mayo tree). A fair number of flowering shrubs may be planted out to great advantage, such as roses, of which all the leading varieties should be planted, we refer to our article on Roses, in No. 2 of our magazine, as a guide for the selection; *Veronica*, *Swainsonia*, *Punica*, (Pomegranate), Rosemary; *Pittosporum tobira*, *Nereum* (Oleander,) *Myrtle*, *Habrothamnus elegans*, *Fabiana imbricata*, *Escallonia rubra* and *alba*; *Eugenia myrtefolia*, *Diosma alba*, *Cytisus*, *Deutzia*, *scabra* and *gracilis*; *Spiræa*, of sorts, *Wiegelia rosea*, *Cercis*, *Calycanthus*, etc.

Some favorite plants which are treated in the greenhouses in the East and in Europe, are perfectly hardy with us, bloom both in summer and winter, and therefore add much to the attractiveness of our garden. The most popular and best adapted of these are the Geraniums, (see article headed Geraniums in this number) Fuchsias, which seem to be at

home here, Heliotrope, Bouvardia, Cuphea, Abutilon, Hydrangea, Lantana, Cestrum, Chorizema, Daphne, Eupatorium, Lagerstroemia, (Grape Myrtle)—only adapted for sunny exposures—Salvia, Calla, Lemon Verbena, and a host of others.

The owner of a garden cannot err in selecting any of the above named plants for his garden, yet he must bear in mind that he should select plants for his front garden which produce effect, while he should retain the more delicate and exquisite flowering plants for his rear grounds. It is there where he will desire to recreate himself unobserved by the passing multitude. But his front garden may be the only place adapted to the culture of flowers, and in that case he has no alternative.

POPULAR BOTANY.

CHAPTER IV.

Having laid before our readers the outward characteristic and development of a stem, we shall now take up the internal structure and show its method of increase.

All stems are composed of elementary tissues, viz: cells, woody fibre and vessels. In the early growth of a stem, the cellular tissue predominates, and in some plants, such as the *Mosses*, it is always in excess. But as the stem of the higher plants grows, woody fibre is mingled with the original cell tissue, and so the stem becomes strengthened so as to be able to resist destructive forces brought against it, and to perform its normal functions.

The cellular part of a stem grows in all directions; it may be either vertically, so increasing the stem in length; or horizontally to increase its diameter. The woody fibre generally runs through this cell tissue, vertically, and has from this reason been called the *vertical* or *perpendicular system*, and the cellular part, the *horizontal system* of the stem. There are two forms, or plans of distribution of the woody fibre through the cellular, and upon one or the other of these forms, the stems of all flowering plants are constructed. In the first the woody fibre is deposited in *annual concentric layers*, having a central pith, and an *exterior* bark. A stem constructed upon this plan, presents on a cross section, a number of rings or circles of wood spreading out in all directions from a central point, within which is contained the pith, while on the outside of all is a separable covering called the bark. The Oak is an example of this form of structure, which, in fact, is common to all trees and shrubs of the temperate climates. The second form which is characteristic of nearly, if not quite, all tropical plants, has its woody fibre deposited in bundles or threads, running through the cellular system, without apparent order. On a cross section of this kind of a stem we find the woody fibre in the form of dots distributed through the whole, the stem containing no distinct pith, and no bark which is separable from the wood.

The diameter of the stem in the first class is increased by the yearly formation of new wood between the previous layers and the bark. Such stems are called *Exogenous* or outside growers. In the second class the new wood is deposited within the old, at the centre of the stem, and so its circumference is increased by a gradual distension from within. These are called *Endogenous* or inside growers.

As has been stated in a former chapter, the seed or embryo contains the undeveloped parts of a plant, and that even in that state we see the future form of the plant growth. Hence we are able to determine the class of stems by the seed-leaves. Endogens bear but one of these leaves, and are also called *Monocotyledonous plants*, while on the other hand the Exogens, bearing two leaves, are called *Dicotyledonous*.

The Exogenous is much the largest class, embracing as it does, all the trees and shrubs in the cooler zones of the world, and therefore commands our more particular attention. As we have before said, the embryo stem is composed of cell tissue only, but as soon as it commences to grow, woody fibre and vessels make their appearance, and in a short time the stem will be found to contain a number of bundles

of woody and vascular tissues, blending one with the other. This is the first stage of its woody system, and as the stem grows these increase in number, so that in the course of a season, a circle or ring is formed which divides the cellular system into two parts; a central portion, the pith and an outward one belonging to the bark. Outside of *all*, of course, is the skin or epidermis, which covers the entire plant.

An exogenous stem of the first season, consists of three parts. *First*, a central portion or pith; *Second*, a layer of wood, and *Third*, an outward cellular portion called the bark.

The pith is made up of soft cell tissues, which at first, are filled with the juices of the plant, after a time these become exhausted, the pith becoming old and dry, and no longer of use to the plant. Some stems grow so rapidly in diameter during their first year, that they become hollow, the pith forming a mere lining to the cavity.

Among the earliest forms of woody tissues in the stem are found several spiral vessels arranged somewhat in a circle around the pith. These make up what is called the *medullary sheath*, containg rays which pass from the pith, horizontally to the bark. The medullary sheath also sends off some of its spiral vessels to the stalks and veins of each leaf.

The *wood* is simply woody fibre, with which the vessels of the stem are more or less mingled.

The *bark* or outer covering of a stem in the first period of its growth is made up of cell tissues, in no way differing from the pith, except in assuming the green color, on exposure to light. But when the wood forms in the stem, a somewhat similar process takes place in the bark. This occurs on its inner side, and is called the *Liber*, resting directly upon the wood of the stem. The cellular portion lying beween this *Liber* and the epidermis is also divided into two parts. *First, the green layer*, or cellular envelope, sometimes called the *mesophlœum*. This is the only part of the bark that has a green color, and is in composition the counterpart of the leaves. *Second*, the corky envelope, or *epiphlœum* which is between the epidermis and the cellular envelope.

FARMING ON SHERMAN ISLAND.

POTATO CROPS—COST OF LEVEE.

Editor Horticulturist:—My subject this time is potatoes. It may seem strange to many of your readers that I take up this subject, but I have done so that they may have an insight into what is being done on this island.

PLANTING POTATOES.

Much of the ground which has been cropped with potatoes during the past year, has been burnt land; land which was covered with a dense growth of grass too heavy to be ploughed, hence the necessity to burn it. In the latter part of the fall if the season is good, and fires are set to burn it, a careful watch being kept, it will burn to a depth of eight or ten inches, leaving the surface of the ground level, and a perfect bed of ashes. After lying in that state some six months, it is ready for planting; the ground being then settled, is in condition for plowing in the ashes; at every third furrow the seed is dropped, and so the work goes on. It is not necessary to cultivate, as in the ordinary way of raising a crop of this kind.

GATHERING IN THE CROP.

It will astonish our Eastern friends, when I tell them that at this season of the year, hundreds of acres of potato are being dug upon this island; teams are busy hauling them to the landings for shipment. This work is generally done by Chinese laborers, at a given price per sack, they assorting them ready for the market. The amount of potatoes that has been dug during the past season, has varied considerably according to circumstances; this was owing to the time of planting, many of our farmers being inexperienced as to the mode of cultivation necessary upon this place. The yield has, taking the early with the late varieties, averaged about 125 sacks to the acre, but experience teaches our people that some knowledge of new lands is requisite to them. Farming is like any other business; it has to be well understood to be carried on successfully.

I have spent some hours this week, in going over the potato district, and I was surprised to see how great a change had been made upon this island. Thousands of acres of land, that twelve months since, I could scarcely walk upon, have been put into cultivation. Here we can raise everything in the way of cereals, fruits and vegetables that can be grown.

OUR LEVEE.

The energy of the Board of Trustees who have taken upon themselves the duty of constructing, good strong levees, has been most praiseworthy; it is to this enterprise we are indebted for a feeling of safety in planting our crops. To build a levee of the size which is now about being finished, costs a great amount of labor and expense. When we retire to rest, we shall feel some assurance of security. Our present levee is the largest, and perhaps the strongest in the State; it has a base of twenty-four feet, and is eight feet in height. To build this, required a large amount of earth; along our front we have a ditch dug, eighteen feet wide by four feet deep, the earth from which has been used in constructing the embankment. Nearly four hundred Chinamen have been employed in the construction of this work. When completed, which will be about the 20th of February, we shall have fifty-four miles of levee of the above dimensions all around the island, the cost being about $120,000.

WHAT WE ARE DOING.

Busy; man and horse are doing all they can, grain is being put in by the thousands of acres in every direction, and what may perhaps seem strange, many are at this time planting potatos on their new lands; while at the back of this land, they are digging and hauling to the landings.

I never saw any land under water upon this island, although the papers speak of it. We are above the influence of tides at this plac.e

D. L. PERKINS.

THE Stockton *Independent* says Mr. Montgomery has nine miles square or eighty-one square miles, making 51,840 acres fenced as a pasture for his stock. How is that for fencing and stock by one "free and enlightened" citizen of California?

PUBLIC PARKS.

In our last number we spoke briefly of some of the prominent Public Parks in the East and in Europe, and sought to demonstrate how important they are to the well-being of the population of large cities. The necessity for a Public Park in San Francisco does not need any argument, and there is no reason to doubt that the people would appreciate and eagerly avail themselves of all the advantages, comforts and pleasures, which such a Public Park would afford; and it is but consistent therefore, to conclude that our people would readily contribute the necessary funds for such enterprise, provided that they could feel assured of the proper, efficient and faithful engineering of such undertaking, and if the subject were advanced before our citizens in an able and business-like manner, we should soon learn how readily it would meet with the approval of the masses.

The establishing of a Public Park, offers certain considerations which it is our purpose to canvass. It is easy to demonstrate, and it will be at once admitted that a Park would be beneficial to, and indeed is necessary for such a population as San Francisco now possesses, and we feel justified in considering this point fairly settled. The next consideration is the practicability of the thing. Objections have been raised to our soil and our heavy winds; we admit that in some localities, where nothing but drift sand is found to a considerable depth, a high state of cultivation could not be attained without the expenditure of a very large amount of money; but we cannot see any necessity for selecting such a locality for a Public Park. Here as well as elsewhere, the soil, exposure, etc., etc., differ very materially, and we are justified in expecting that for Park purposes, the most advantageous and practicable locality would be selected. We have no doubt in our own mind, that a site can be found in San Francisco which would answer that purpose. We have as good soil here as is desirable for a Park of the greatest magnitude, and this fact should settle the question as to soil. It is also true that we have very strong winds, which may necessitate the planting of screens, and belts

of trees, to protect the more favorite and frequented portions of a park, and the more delicate trees and shrubs, but this cannot be considered a very serious objection, when we consider the extreme cold and other difficulties, which make the planting and keeping of parks in the East and in Europe, far more laborious and expensive. When we view the improvements which adorn our private residences, we must certainly arrive at the conclusion, that plants and trees under proper management do as well here as anywhere else, and that our climate admits of the introduction of a much larger variety of trees and plants, from almost every climate, than could be cultivated anywhere else. That which meets our eyes every day in San Francisco, is sufficient evidence of the practicability of establishing a noble Park in or near the city of San Francisco.

The Supervisors of the past, moved this park question, and even went so far as to secure a site for a Park, but we doubt very much whether they had the interests of the city at heart, when they accomplished the deed. The land selected for the purpose is situated near the Central Road, and is bounded on the west by the Pacific Ocean. Three-fourths of the ground consists of hills of drifting sand, destitute of any vegetation, while a small portion near the city is better adapted to park purposes, and is at present partly overgrown with live-oak and other native shrubs. Our last legislature also did something towards inaugurating work on the park by passing a law appointing three Park Commissioners, who were authorized to issue bonds and sell them at par, in order to raise funds for prosecuting the work. Unfortunately the interest offered on the bonds, was too low to induce our capitalists to invest, and only about $15,000 in cash were realized: this amount was expended in payment of a survey and office expenses, and the probabilities are now, that nothing more will be done until our next legislature meets. We think the selection of the ground for the park, an injudicious one, although it is capable of improvement, yet far better land could have been selected. The area of the park ground is far more extensive than San Francisco requires, the location is not central, and the land is very much exposed; however, that portion which is situated nearest to the city, is available for a park, and the area between this portion and the ocean might be covered with vegetation and trees, to protect the portion nearest the city, and also, to make the ground more valuable. Sooner or later, the sand hills between the city and the ocean will have to be covered with vegetation of some kind, as a sanitary measure; also to economise by checking the drifting sands, in grading and cleaning streets; and to increase the value of the property itself. If our Park Commissioners will demonstrate that these sand hills can be covered with vegetation, property owners will soon follow, stimulated thereto by the necessity of protecting their own interests. In the city of New York, the Park Commissioners enjoy the full confidence of the people, and their power has been increased from time to time, until now they manage not only the Central Park, but also the city squares, and other improvements calculated to increase the attractions of the city.

By the injudicious selection of ground for our park, the movement for the contemplated improvement was checked, and the public were justified in looking upon the affair with suspicion. We do not say that the projectors of the scheme have acted in bad faith towards the city; but, although that may not have been the case, they certainly depended too much upon their insufficient judgment, and should be severely censured for not consulting the public, and such men as are qualified to give an opinion as to the practicability of the scheme. Such waste of public funds, whether made intentionally or from ignorance, obstructs public improvements, and discourages those men out of whose pockets the money has to come; however if we fail to have a park before long, the delay must be attributed not so much to the Park Commissioners, as to the indifference of our public. Whatever may be done in regard to the park, we hope will be done openly, so that the public may know the exact position

of affairs, and more interest will be taken in the matter, and if properly agitated, new ideas may be suggested by which our park interests may be greatly advanced.

The judgment of our former supervisors was equally injudicious in the planting of our public squares. San Francisco has paid good round sums of money for the few trees and shrubs now growing in those enclosures; but we see no corresponding value. The object of a public square was either not understood, or willfully set aside, the trees offer no protection, and present a sameness and regularity of appearance which kills the effect of contrast so desirable in a city, where nothing but uniformity and straight architectural lines prevail. Deciduous trees have the advantage of reminding us of the continual changes of season; it is refreshing to see new leaves and flowers bursting forth in spring, and the spreading branches protect us from the hot sun and the unpleasant winds, the birds are protected among the leaves, and help to enliven the scene; and when autumn tinges the foliage with its peculiar tints, we are pleasurably reminded of many a long cherished scene with its tender associations. We hope, however, that the new order of things in the city will effect a change for the better, and that nothing will be left undone which will please the taste and gratify the wishes of our people, and which will tend to improve our city, and render it more healthy, attractive and comfortable.

In connection with this subject, we must remark, that on recently visiting the University Grounds at Berkeley, near Oakland, we met with considerable disappointment; we expected that a large variety of trees and shrubs would have adorned the precincts of this our central seat of learning; but we found that the plantation consisted of gum-trees, pines, cypress, and a few acacias. The Eucalypti are lively enough in appearance in their youth, when their leaves are large and abundant, but present a very sombre appearance in their native forests where the sparseness of their foliage will not even, in their wildest depths, protect the wanderer from the scorching rays of the sun. Of the pines and cypress we have at various times spoken as undesirable, and only to be used sparingly. Our climate is peculiarly adapted for the growth of trees, deciduous as well as evergreen, from nearly every part of the world. What a glorious opportunity is afforded for the display of taste and extended forethought in laying out this area; what a chance for making a provision and a name for the future, when the ornamental grounds of the University of California, eventually merging into one of the finest botanical gardens in the world, shielded, protected, adorned by magnificent specimens of grand old forest trees, selected when young from every part of the world, monuments of the enlarged, patriotic and tasteful views of the first Board of Regents, shall foster within this favored area, and present to the study of the young and aspiring botanist, such a numerous, and varied selection of rare and choice plants as will not be found in any other part of the United States. We know a large majority of the Regents to be high-minded liberal gentlemen, of extended views, who are anxiously seeking the welfare in the future of this State; but we fear they have permitted their judgment to be warped in this matter by the machinations of some narrow-minded, mean-spirited speculator, who in his breakneck pursuit of the almighty dollar, has imposed his heavy and almost unsaleable stock of evergreens upon them; however we hope it is not too late, and that some deciduous trees may yet be planted out. But more of this anon.

Eggs in Winter.—Deitz, in his *Experimental Journal*, says: To have hens lay in winter, feed the following kinds of food: Boiled meat chopped fine, or chandler's cracklings chopped fine and soaked in hot water, to cause it to swell before feeding; bread crumbs soaked in ale; oatmeal mixed with milk. The above feed is stimulating, and tends to make fowls lay. They at the same time should be fed regularly with corn, wheat screenings and barley. By feeding the above regularly, and keeping the fowls dry and warm through the winter, the largest amount of eggs will be had.

LECTURE ON THE CONIFERÆ, BY PROFESSOR BOLANDER.

CONTINUED.

Of the pines already described, the following also occur on the Sierras: *P. Sabiniana*, in the foot-hills from 300 to 4000 feet altitude; *P. ponderosa*, (Yellow Pine), from 1500 to 9000 feet; *P. turberculata*, from 2000 to 3000 feet. *P. Lambertiana*, (Sugar Pine), from 4000 to 9000 feet; and *P. contorta*, from 4500 to 11,000 feet.

I shall now proceed to describe those which have not been detected, thus far, growing on any of the coast ranges.

Pinus monticola, (the Little Sugar Pine.)—This species attains a height of nearly two hundred feet, and a thickness of two to four feet. Its outline is cylindrical. The branches are short, flexile and densely set. A characteristic exception is made by the terminal or topmost branches, which resemble greatly, in irregularity, the cone-bearing branches of the Sugar Pine, and which bear the pendulent cones from two to four in a cluster. The cones while closed, are of a narrow cylindrical form, from six to eight inches long, and about one and a half or two inches in diameter. They are generally sprinkled with numerous patches of white resin. In September they open their scales widely to emit their seeds, and then fall during winter to the ground. The leaves are rather short, much like those of the Sugar Pine, and five in a cluster. The bark is quite different from that of the Sugar Pine; it is of a grayish white color. This species is said to yield excellent timber, even better than that of the noble Sugar Pine. But the fact that it occurs only in the high inaccessible mountain recesses, and that it is rather scattered in its manner of growth, reduces its usefulness to those functions only, which trees generally perform in nature. In Mariposa county it sets in at about 7500 feet, and rises to 10,000 feet. On the Mono trail, east of little Yosemite Valley, it associates largely with *Picea amabilis*, forming an extensive grove. The finest specimens of this remarkable tree are perhaps seen near Sonora Pass; nowhere have I seen this species more beautiful and more accessible. Trees belonging to this species, seen on the hills and mountains adjacent to the Pacific railroad from Cisco to the summit, are but poor representatives and give no idea of its beauty and size. Its distribution over the western mountains is not fully known. If I remember rightly, it has been seen as far north as Mount Rainier. Its southern limit cannot be even approximatively given. It bears great resemblance to the Eastern White Pine, (*P. Strobus.*) In our gardens it has not yet made its appearance.

Pinus flexilis, (Mountain White-Pine).—This species occupies the sub-alpine belts of the Rocky Mountains and the Sierras. It differs very much in size. At 10,000 feet altitude, it is a tree of one hundred and thirty feet high, and is from two to three feet in diameter; but on the high exposed crests of the Sierras and Mount Shasta, it is reduced to a mere straggling shrub, creeping on the ground. The cones in consequence vary considerably in size. Where the tree has obtained a stately size, as is the case on the mountains of an elevation of 10,000 feet a little east of Little Yosemite Valley, its cones measure from four to five inches; but where it is reduced to a mere shrub, they are scarcely from one to two inches long. It is a fine tree, with tapering trunk and conical outline, branching almost from the base, the lower branches are horizontal, the upper ones ascending. The wood is white and soft; the annual rings from one-eighth to one-half line, on an average one-fourth line wide. The leaves five in a sheath, are crowded towards the end of the very flexible branches, persistent from five to six years, usually one and a half to two and a half, very rarely one or three inches long. The cones are sub-cylindric, tapering to the end, four to five inches long, and two inches in the largest diameter, resting on short peduncles, the scales are wide and squarrose; the lowest sterile ones recurved; the fertile ones with deep impressions for the reception of the seeds, both on the upper, inner side, and on the back. The wing is minute, reduced to a persistent keel on the upper

end, and outer edge of the seed. The embryo has eight or rarely nine cotyledons. In our gardens, it has not yet made its appearance. It is possible that it would do well in gardens, exposed to our cold summer breezes.

In the Rocky Mountains it occurs from New Mexico to the forty-ninth parallel, never forming entire forests. There it associates with *P. contorta* and *P. aristata, Engelm.* On the high crests of the Sierras it is found growing with *P. contorta*, and *Abies Pattoniana.*

The species described under the name *P. albicaulis, Engelm*, and *P. cembroides, Newb.* is our *P. flexilis*, just now discussed. It was already made known 50 years ago.

Pinus aristata, Engelm.—The pine known under this name has not yet been introduced into gardens. In fact, it is but very little known, though widely distributed over our highest mountains. It is a small or middle sized tree, with a dense and crowded foliage, the leaflets are about from one inch to one and a half long, five in a sheath, and for many years persistent, the cones are from two to three inches long, tapering abruptly from a broad base.

It was first discovered on alpine heights between 9200 and 12000 feet, on Pike's Peak, and on the high mountains of the Snowy Range, by Dr. C. C. Parry in 1861, who gives the following description: "On sheltered slopes, a tree 40 to 50 feet high, and one to two feet in diameter; it becomes a straggling bush, prostrate, and almost creeping, on the bleak summits of the high ridges. The bark is thin and scaly, even in older trees not more than three to four lines thick, of a light grayish-brown color; that of younger branches smooth, with many large vesicles containing a clear fluid balsam, which remains between the layers of the old bark. Wood white, tough, not very resinous; of extremely slow growth, so that a small smooth barked stem of 13 lines diameter, exhibited about 50 annual rings, all between 1-6th and 1-60th of a line wide. Branches spreading, very often many of them twisted, stunted or dead; the larger branches of the stem itself frequently covered with young branches or shoots, which seem to keep life in the old trunk. Leaves crowded from the axils of ovate, acuminate, brittle, at first light-brown scales, which, persisting longer than the leaves themselves, cover the branches with their rough blackish remains; leaves light-green on both sides without white dots, mostly with numerous exudations of white resin, usually curved upwards, entire on edges and keel, abruptly acutish, stouter in fruit bearing, more slender in such trees as produce principally male flowers, in very robust specimens 1¼ and rarely 1½, usually about one inch long. Cones oval, obtuse; 2¼ to 2½ inches long, about half as much in diameter, often covered with resin as if varnished. Seed nearly 3 lines long, with the obovate wing six to seven lines long; embryo in all the seeds examined with seven short cotyledons."

Prof. Wm. H. Brewer, of the Cal. State Geological Survey, found this interesting species on the highest parts of the Sierras opposite Visalia. Prof. Gabb collected it on the White Mountains, south of Mono Lake.

Pinus monophylla, Torr. (P. Fremontiana, Endl.—This odd species inhabits the eastern slopes and hillsides of the Sierras; it belongs in fact, to the vegetation of the Great Basin. It attains a height from 20 to 35 feet, and a thickness of two to three feet. Its outline is oval, resembling very much that of our common live-oak (*Qu. agrifolia*) in the vicinity of the bay of San Francisco. It is of a glaucous color, quite in harmony with the color of the dry hillsides, and the drab colored vegetation of the sandy undulating plains of those regions. Forming groves on the hillsides, and scattering along the slopes of ravines, it affects the landscape in a similar manner to our live-oak. Its wood is highly prized as fuel by the settlers, who consider it equally as good as hickory. It is evidently of a slow and stunted growth, with a light, glaucous and airy foliage. There is generally but one leaf in a sheath; but sometimes two. What appears to be one round needle-shaped leaf, seems to consist of two leaves agglutinated; for in a dry state, they become actually separated into two. All parts of the tree exhale an offensive odor, and are quite

resinous. The cones are of a light drab color, almost top-shaped, two to three inches long, and contain numerous large wingless seeds, eagerly collected by the Indians for food. Its distribution is quite unsettled: it appears, however, that it extends south from Mono Lake on the eastern slope of the Sierras. Differing as it does in size and form, several varieties have been described and even considered as distinct species (*P. edulis.*)

I have seen but one specimen in our gardens, which obtained in five years the remarkable growth of fourteen inches. It is not likely that it will be looked upon as anything more than a curiosity. Concluding my remarks on the thirteen species of pines, growing in this State, allow me to enumerate them once more in the order we meet with them from the coast to the great valley of the interior. *Pinus insignis, muricata, contorta* and *Torreyana* on the immediate coast; next, *Pinus ponderosa, tuberculata* and *Lambertiana* on the highest portions of the coast ranges, and finally *Pinus Coulteri* and *Sabiniana* on their eastern slopes, bordering Sacramento Valley. Crossing this valley and ascending the Sierras, we meet the same pines, except four, in the same order, but inversed, namely; *Pinus Sabiniana, ponderosa, tuberculata, Lambertiana* and *contorta.*

Adding now the rest, not occurring on the coast ranges, we have: *P. monticola, flexilis, aristata* to the highest crests; and *P. monophylla* on the eastern foot-hills, bordering the Great Basin. Or, if we take the Sacramento Valley as our stand, looking west and east, we have the following arrangement:

Coast Ranges.	Sierras.
P. Sabiniana	*P. Sabiniana*
P. Coulteri	*wanting*
P. Ponderosa	*P. Ponderosa*
P. Tuberculata	*P. Tuberculata*
P. Lambertiana	*P. Lambertiana*
P. Muricata	*wanting*
P. Insignis	"
P. Torreyana	"
P. Contorta	*P. Contorta*
wanting	*P. Monticola*
"	*P. Flexilis*
"	*P. Aristata*
"	*P. Monophylla*

AGRICULTURAL AND HORTICULTURAL WORK FOR FEBRUARY.

During the past month we have had some good warm rains, and we have no excuse for delaying the preparation of the soil of our gardens and fields for the next crops. The days are lengthening and assist our efforts to make up for lost time, and yet the evenings are long enough to consult with our neighbors, exchange information, learn by each others' experience, and gather facts. "A good talk is the most healthy and nourishing food for the mind."

The pruning of orchards will have been finished, and the ground of course has been plowed. February is a good time for destroying insects in the orchard, where they have proved troublesome. Many of these have their hiding places in the rough bark of the trunk; with a proper scraper it is easy and quick work to remove the rough outer bark, which operation will do no harm to the tree and will destroy, or at least remove the insects on to the ground. To prevent them from re-ascending the tree by the trunk, we advise to adjust around the lower part of it a rag dipped in coal tar, to which the insects will stick in ascending the tree. Besides scraping the bark, a good washing of the trunk with lime will be beneficial. This operation will also be beneficial to ornamental trees and grape vines.

The planting of trees and vines must not be delayed any longer, or else our dry summer months will prove fatal to the young plantation.

Prepare the soil for the kitchen garden by adding plenty of manure; purchase your garden seeds and select the best, not the cheapest. Change your crop and do not endeavor to raise the same varieties of vegetables on the same ground. All hardy varieties of vegetables may be planted; but such as beans, tomatoes, cucumbers, melons, etc., may be delayed another month. In localities where no frost is anticipated, tomato plants may be removed from the frame and planted in the open ground. If a small quantity of early tomatoes or early

cucumbers for family use are required and a frame or hot-bed is at hand, some tomato plants or cucumber seeds may be planted into pots and advanced in growth under cover so that when the cold weather is over, they can be taken from the pots with the ball of earth and planted in the open ground, without being set back by the operation; these well advanced plants will soon come into bearing. While in the frame, the plants should receive plenty of fresh air to keep them in healthy and thrifty condition.

In the flower garden much can be done to improve the condition of things. A general overhauling should be resorted to; pruning, training and trimming should be done at once, if not already finished. Seed of Mignonette, Sweet Alyssum, Candytuft, Pansies, Larkspur, Sweet Peas, Sweet William, Canterbury Bell, Lychnis, Hollyhock, Pinks and other hardy annuals and perennials may be sown in newly prepared ground. Cuttings of roses, honeysuckles and other deciduous flowering shrubs should be planted. Continue to plant out hardy bulbs, such as Hyacinths, Tulips, Crocus, Narcissus, Pæonies, Gladiolus, Anemones, etc.

In the green-house and conservatory, the flowers of the Camellia, form the chief attraction. Azaleas, Cinerarias, Primulas, Heliotropes, Ericas, Bignonia Grandiflora, Cyclamen, etc., have come into flowering, and give the house a more cheerful appearance. Continue to water Camellias well; many plants which have out-grown their pots, want re-potting, as they commence to push their new growth for spring-flowering; pinch off the tops of young plants, so as to make them bushy; give fresh air during the earlier part of the day; roses and other woody flowering shrubs may be forced for the early spring trade. Insects should be destroyed by fumigating the house with burning tobacco, before they overrun the plants. Gather up all decayed leaves and keep the house clean; your plants will profit by it, and you much improve the general appearance.

In the grapery, the buds now begin to swell; as soon as they have started, tie up your vines, keep the air moist by evaporating water or by sprinkling; the temperature should not be kept below fifty degrees during the day, thirty-five during the night.

Plants in the parlor-window should receive frequent airing, and a sunny exposure.

ASPARAGUS.

The first consignments of Asparagus have made their appearance in our markets, and are selling at high prices. In a few weeks the markets will be well supplied, yet the demand will exceed the supply, although the bulk of this highly appreciated vegetable is of a very inferior quality. It is not unusual to see Asparagus offered for sale in our markets which is absolutely unfit for use. The reason for this is the bad management of the soil by those who know very little about the cultivation, or who do not care what they furnish, so long as they can sell the article at a good price. Asparagus raising we consider a most profitable business, and any one who will enter into the enterprise aright, will find that one acre well planted with Asparagus, will afford a good living for a family. The Asparagus has hitherto been planted in soil not adapted for it, it has not been prepared deep enough, and where it was adapted, it has been exhausted without making the least effort to refertilize it. Much has been said for and against the blanching process; we are inclined to believe that blanching is unnecessary when the ground has been prepared deep enough and where the young roots have not been planted near to the surface.

If any of our readers are partial to Asparagus, and have not already lost their love for it by purchasing the inferior shoots offered in our markets, we would advise them to prepare a bed at once in the following manner:

Stake off a bed of the dimensions required (a border five feet wide by twenty feet long will be sufficient for a small family) in a sunny exposure, and where no irrigation is employed

during summer; dig out the soil to the depth of three feet; if the natural soil is loam, you may fill in your top soil, which is always the best, first to the depth of one foot, cover well with old rotten manure and mix the whole thoroughly; then fill in another layer of good loam and mix with manure as before. This will bring the bed to within one foot of the surface. Then plant your Asparagus roots, which may be one, two or three years old, (two years old are the best), twelve inches apart in the rows, and from fifteen to eighteen inches between the rows; but plant the outside rows six inches distant from the edge of the bed. In planting, spread the roots in all directions and fill in between them well with soil so as to leave no vacant space. (We used to form little hills four or five inches high on which we set the plants, allowing the roots to spread evenly over the inclined sides). You may then fill in and cover with what was formerly the subsoil, raise the bed to two inches above the surface, so as to make allowance for settling, and cover the whole with a good top-dressing of manure.

The second year, you may cut a very few shoots, if you used strong and vigorous plants in setting out the bed; care must be taken not to exhaust the plants by cutting too much. In the third year, the crops will be larger, and after that you may cut almost without reserve.

From year to year, the Asparagus bed should have a good top-dressing of manure at the commencement of our rainy season; no irrigation is necessary, and too much of it is injurious. The summer is a season of rest for the Asparagus. The shoots should be cut as soon as they make their appearance; it is therefore necessary to inspect the plantation every morning, and if enough of them are not found in one day to make a dish, cut, and keep them in a cool place, wrapped in a damp (but not wet,) cloth, they will keep well for one, two, and even three days.

As all our readers know, only the upper part of the the young shoots is eaten, and how much of that portion is palatable, depends on the proper mode of cultivation, and the time of cutting.

ANIMAL LIFE.

From the lowest depths of the mighty ocean, to the cloud-capped snow peaks of the mountain top, in the clear water of the crystal spring, in the air we breathe, in the ground beneath our feet, on the vegetation springing from the soil, and in the sparkling dew drops that befringe it, in the misty drops distilled from nature's clouds, and in the dust which is drifted by the wind; animal organisms are to be found adapted to their location. Every place, and nearly all space is occupied by animal life:—

"Above, how high progressive life may go,
Around how wide, how deep, extend below."

How mysterious and wonderful is that creation of the Almighty "*Life*," how beautiful to contemplate, to study and investigate, bearing in mind that we are the great final link, the "Caput" in the chain of all animal creation. Yet man who in his exalted station, can call down from the thunder clouds the vivid lightning flash and confine it in a Leyden jar, cannot explain the organism contained within the seed germ of the acorn, from which springs the future noble oak, nor the living principle of the animal. Nature persistently and obstinately refuses to have her sanctum invaded, and to show to him in what the life-giving principal consists, but the active and never resting-brain of man is continually prying into her secrets, and not satisfied with the wonders displayed to his unassisted eye, he calls to his aid the microscope, bringing into view thousands of objects till then invisible. Place a drop of clear water on a piece of glass, and to the naked eye it appears transparent and free from all organic life, but place the same on the field of the microscope and we behold a world of animal life within it. Take from the same water a glassful, and by chance you may see with the naked eye one or two of the larger animalculæ, but should you fail, come with me to the sparkling brook, fringed and bordered with vegetation, where the pearly sided, crimson speckled trout loves to dwell, and from its cool, refreshing waters, pluck the stalk of some aquatic plant, say a cress, and

you will see adhering to it some few of the animals of which we are in search, and large enough to be examined by the unassisted eye. The larger ones sustaining themselves by devouring their lesser brethren, they again being fated to be eaten by animals of greater magnitude. Thus in animal life one devours the other, while from the smallest animalcule to the largest vertebrate, they exercise a choice in the kind they eat, and are ever searching for that food which is most pleasing to their taste and best sustaining to their systems. From the sponge, the connecting link between the animal and the vegetable kingdom, and the lowest mollusk, to the highest mammal we find each eating and sustaining himself on the other, and every animal devouring that which is most palatable to it. To withdraw some favorites from this peril, and to shelter them somewhat from this wholesale and indiscriminating slaughter, amounting almost to a war of extermination, especially in their extreme youth, we shall seek to enlist the sympathies and invoke the aid of the reader ere we close this article. The Brook Trout, (*Salmo fontanis*), live on aquatic insects, and diligently search for those kinds most agreeable to their natures, they again are eagerly sought after by man, their flesh being pleasant to the taste, and well suited nourishment for the development of the nervo-muscular force. The devices, snares, traps, nets and hooks, invented for the capture of trout, and their various enemies, in the shape of cold-blooded animals, have nearly exterminated them from all creeks and rivers within miles of large cities, and it is wonderful that they are able to reproduce their species at all.

The ova of trout are food for numerous animals, and it is estimated by those competent to know, that less than one-eighth come to maturity. To obviate this great destruction of fish eggs, artificial hatching was proposed and has been successfully carried out, by placing the spawn in such position as to be protected from all animals large enough to devour it. By this process seven-eighths of the eggs can be hatched; thus art surpasses nature.

The Ornithological and Piscatorial Society of California is now importing the choicest fish eggs for artificial hatching, with the intention of stocking the streams and lakes of this State, thus conducing to the health and amusement of the lovers of the gentle art, the disciples of Isaac Walton.

W. A. N.

How to Sweep the Floor.—In the days of our Puritan grandmothers, no girl was considered fit to receive proposals of marriage till she could make a good hemlock broom; to know how to make a broom in those old days, we presume, was always preceded by the knowledge of its use. But in these later times, many a young lady not only offers herself in the matrimonial market, but absolutely gets married and undertakes to manage her house without knowing how to use a broom that some one else has made. We have seen a broom used so unskilfully, that one would almost think the person engaged in using it was endeavouring to change the place of the dust from the floor to the furniture. It requires some science, or at least some skill, to use a broom well, as it does to do anything else.

To use a broom skilfully, the handle should incline forward and not backward, as is often the case. If the top of the broom inclines forward beyond the part next the floor, it will prevent much of the dust from rising into the air, and will carry it along by a gently sliding motion towards the place where it is to be disposed of.

If, on the other hand, the handle of the broom inclines backwards, the dust is sent into the air by a kind of a jerk, to the great annoyance of those who occupy the room, and to the great detriment of everything the apartment contains. More than this, it wears off the threads of the carpet quicker, injures the paint more, if the room is uncarpeted, and destroys the broom sooner, than if the sweeping was done in a more rational way.

A brush of bristles is always better to sweep a carpet, as it is less liable "to kick up a dust," or to injure the texture of the carpet. Moistened tea leaves thrown over a carpet before sweeping, will help to prevent the dust from rising, and on account of the peculiar property of the tea infusion, they will not injure the color of the cloth. After the first snowfall, carpets may be cleaned of dust by throwing a little hard snow on them when the room is cold, and quickly sweeping it off.

The *Prairie Farmer*, in an article on Prizes at Fairs, suggests that premiums be offered for plans for saving the produce of the farm and for making the farmer's home pleasant and comfortable. It further says it should be the aim to offer prizes "for things that will encourage research and investigation, bring forth new facts, and reward patient industry."

Beet Sugar.—The total product of sugar in the world is estimated to be 2,800,000 tons, in the following proportions: sugar cane, 2,000,000 tons; beet, 630,000 tons; palms, 140,000 tons; maple, 30,000 tons. Beets furnish one quarter the sugar product of the world.

Editorial Portfolio.

It is a conceded fact in agriculture, which no one will dispute, that manures are necessary to the fertility of the soil; and the farmer cannot expect his fields to yield, year after year, an abundant harvest, unless he replaces the organic and saline substances, which his growing crops draw from them, by some kind of fertilizing material.

Agriculture has made rapid strides in progression during the past fifty years, and must perforce make as much more in the fifty to come. Not only must the lands of the farmer be kept from falling off in productiveness, but must be made to yield a greater abundance to meet the ever increasing wants of mankind. To do all this, we have improved machinery for working the soil, and to gather the crops with as little loss as possible. Man has gone to the four corners of the world, in search of fertilizers to renew the former wealth of agricultural lands, and even the chemist has been called into requisition to furnish his quota to the general good. Yet with all these efforts to increase the vegetable productions of the world, there has been one important means overlooked, or it at least has commanded but little attention; and that is irrigation.

In ancient times, this aid to agriculture was well understood, and systems for general irrigation prevailed to a large extent. The Chinese have had, from their earliest records, an extensive system of irrigation. They not only divided their fields by numerous water channels, but even extended the system, so as to embrace large tracts of country. In Hindostan even to the present day, the whole of the *rubbee*, or small grain crop, is artificially watered. In every part of Asia, more especially in the Mysore country, water is retained or preserved, for the purpose of irrigation. The Sultan Tippoo, caused banks to be made between the bases of the hills, thus intercepting the streams, which during the rainy season flow from the hill country, and instead of being lost, are collected into vast reservoirs for agricultural use. Italy is the only country in Europe that shows anything like a system of general irrigation. There we find a network of noble aqueducts and canals, ramifying in all directions over the country. Many of them, have been in existence upwards of eight centuries. The great canal known as "Vecchiabbia," was in a flourishing condition in the eleventh century. In 1220 the "Adda," which waters the plains of Lodi, was completed, and in 1460, the canal of "Martesano," extending for a distance of 32 miles, with many side branches, was finished. In England, and on the continent, this subject of irrigation is now receiving its full consideration, and is looked upon as one of the most valuable adjuncts to a high state of cultivation. If the matter is one of so much importance in those countries, favored as they are by nature with a copious rain fall, of how much more importance is it to California, with her peculiar climates and seasons.

At present we are dependent for our agricultural supply of water upon Nature alone; which, when she is kindly disposed, is perhaps all sufficient, but there are seasons when the supply from this source is altogether inadequate to the demand. Again, in some portions of the State, agriculture languishes, no matter how much or how little rain falls, because of the influence of winds, causing a rapid evaporation at the close of the rainy season, so that often in but a few weeks the soil is dry and parched; the crops losing their main source of nourishment at a period when most needed. All this can be remedied, and the State converted into a vast field of productiveness by a system of general irrigation.

There is constantly a large volume of water pouring down the slopes of the Sierra Nevadas. passing down along the channel-ways of our rivers, and so into the ocean, a portion of which might be utilized, serving as a vivifying influence to the soil, and enriching our State a thousandfold. At first-sight, this might seem to be a utopian scheme, and one not likely to be carried out with any degree of success. However, a company has been formed for this very purpose, and also to supply this and interior

cities with water. It is purposed to draw their main supply from Lake Tahoe, using the beds of creeks and rivers, as their channel ways. They propose to supply water for mining and agricultural purposes, and when the work is completed, a large belt running directly across the State, will have ample means for irrigation. This system, which is but the plan of the Sultan Tippoo, on a large scale, is equally applicable to all parts of the State. The Sierra Nevadas furnish a water-shed, extending the whole length of California, and offer numerous points for the establishment of reservoirs, from whence water can be distributed over the length and breadth of the State.

There are also local means of irrigation which the farmer should make use of. These are wells, springs, and brooks; and each, and all of them, can be utilized by the farmer, to increase the yield of his fields. There is no sense in letting a stream flow across a field, without making it pay toll for entrance and exit; and he who does so, is not consulting his best interests.

Besides the benefits conferred upon the soil in keeping it moist, irrigation is really a manuring process, and adds to its fertility in many ways. It carries off matters that are deleterious to the crops; deposits organic and saline materials useful to plant growth; allows a more general mingling of atmospheric air in the interstices of the soil; and further, by keeping all parts of the plant moist, it stimulates them to grow in a more vigorous and thrifty manner.

It is to be hoped that our farmers will see the importance of this subject, and endeavor to make a good use of all their irrigating facilities. Large tracts of country now lying idle, will then be brought under a state of cultivation, and add immeasurably to the wealth of the country.

Dreer's Garden Calendar.—We have received the third edition of this small but valuable work, and also a package of new and choice vegetable seeds, for which we return friend Dreer our thanks.

THE ORNITHOLOGICAL AND PISCATORIAL ACCLIMATIZING SOCIETY.

This Society was organized at the commencement of last year for the purpose of importing the best varieties of foreign game birds and fish to this State, and for the protection and propagation of them here; also to strictly enforce the game laws, and endeavor to procure the enactment of a law to prohibit the trapping of Quail altogether, except for scientific and propagating purposes.

The Society endeavored to prevent trapping before the commencement of last season, by posting notices all through Contra Costa, Marin Co., San Mateo, part of Alameda, and most of the towns throughout the State, offering fifty dollars reward for information leading to the conviction of any person found killing or trapping Quail before the 15th of September. They also sent men throughout the country, to discover those who were in the habit of trapping, and by these means induced the police of Oakland and Brooklyn to interest themselves, and they detected some five or six persons in the act, who were heavily fined.

The Society is in communication with gentlemen in New York, Buffalo, London, Australia and elsewhere, with a view to the purchase or exchange of game birds.

The Society is also the sole agents on the Pacific Coast for the sale of trout and other ova from the fish farm of Seth Green and A. S. Collins, Caledonia, New York.

Several thousands of Eastern trout eggs, have already been received, and are now in the troughs at the hatching house of the Society, at the corner of Fulton and Gough Streets, San Francisco. Another consignment of eggs is expected shortly.

The monthly subscription to this Society is fifty cents, and any person can become a life member by the payment of twenty dollars.

Seth Green's book on Pisciculture, can be obtained at the office of the Society, 632 Mission Street.

The Society is also agent for A. S. Collin's patent spawning boxes. Any information concerning the Society can be had by applying to the Secretary, 632 Mission Street.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

An adjourned meeting of this Society was held on the 14th of January, for the purpose of listening to Prof. Bolander's lecture on the Coniferæ of the Pacific Coast; a complete report of which will be found in another part of this journal. The meeting was well attended.

The fifth regular meeting was held, January the 28th, 1871. After reading the minutes, the Committee on Rules and Regulations for Exhibitions, submitted their report, and were discharged. The Rules and Regulations, as submitted by the Committee, were, after a few slight alterations, adopted. (We shall publish these Rules in our next No.)

Mr. Wm. Robertson, of San Francisco, and Mr. John Rock, of San Jose, were proposed for regular membership. The following named gentlemen were proposed as honorary members. H. P. Williams, Esq., Editor of the "Horticulturist," N. Y.; Hon. Marshal P. Wilder, Dorchester, Mass.; Chas. Downing, Esq., Newburgh, N. Y.; P. Barry, Esq., and —Ellwanger, Esq., of Rochester, N. Y.

On motion, a committee was appointed to make inquiries as to a suitable locality for the exhibition, which the Society proposes to hold next September, and also to obtain estimates as to the probable cost of said exhibition. A committee was also appointed to frame a premium list for exhibitors. A resolution was passed, requesting all members of the Society, to visit the different nurserymen, gardeners, horticulturists, and all others who are interested in the development of our horticultural and agricultural interests; and to induce them to become members of this Society.

[We would state here, that the meetings of the Bay District Horticultural Society of California, are held on the last Saturday of each month, at the rooms of the Academy of Science, No. 622 Clay street, at 8 P. M. Any person who wishes to become a member, can receive all the necessary information in relation to the Society, by applying at the Secretary's office, No. 418 Kearny street].

NEW AND RARE PLANTS.

Parson's New White Mignonette, Reseda Odorata maxima.—This new and lovely Mignonette will be an universal favorite; it is so much superior in odor, habit and color—being nearly pure white—it cannot fail to be grown in preference to the other variety; the spikes are large and beautifully shaped, and one pot of it will perfume a whole house. There are many plants advertised, eulogized, and sent out to the public as something very superior, when they are no better than existing varieties.

Cotoneaster Simondsii.—This is a beautiful hardy, evergreen shrub, with glossy dark green leaves, and bearing a large quantity of scarlet berries, which ripen later than the Berberis Darwini, and will hang all winter.

Hydrangea Otaska.—A bold shrub bearing globose cymes of pale or sky blue flowers. Specimens have developed compound flower-heads of 42 inches in circumference. The flowers themselves are somewhat smaller than those of the common Hydrangea. It is a native of Japan, and is highly ornamental.

Hydrangea paniculata grandiflora.—Is another remarkable ornamental plant. Its flowers are white. It is a hardy deciduous flowering shrub, blooming in August.

Ornithological and Piscatorial Acclimatizing Society of California.—This Society held a meeting Feb. 9th, 1871, in the rooms of the Academy of Sciences, No. 622 Clay Street. The following named gentlemen were elected officers for the ensuing year: President, W. A. Newell, M. D.; Secretary, John Williamson Esq.; Treasurer, James Rolph Esq.

Books Received.—As will be seen by our advertisment page—, we have received from the House of Orange, Judd & Co., N. Y., a number of valuable and instructive works for the Horticulturist, Agriculturist and Stock-raiser. These works are of standard authority, and contain matters of interest to all.

Agricultural Department.—We have received from the Agricultural Department at Washington, the monthly report on agriculture, and also a quantity of "*White Schonen Oats*," a new variety imported from Hamburg. Parties who are engaged in grain culture and who desire samples of these oats for experimental cultivation, can be supplied with them on application at this office. The only condition required, is that the persons so receiving them, shall report the result to us, and so enable us to report to the Commissioner at Washington.

Cabbage Disease.—The Albany, New York newspapers report that the farmers in that vicinity, having large cabbage patches, are losing their crops by the ravages of small worms that swarm upon each plant and eat out the entire heart in a few hours. A gentleman from Ione Valley stated to us the other day, that all the cabbages in that locality had been destroyed by the ravages of a small insect. From his description we should judge it to be an *Aphis*. On inquiring, we found that all parts of the State had been more or less overrun by this insect. In the next number of this journal we shall endeavor to give a more detailed account of this *Aphis*, and also means for its destruction.

The Poultry House.—As everything connected with poultry now-a-days has a peculiar interest, we give the following sensible remark from an English paper. First, of the roost and nest house. The floor should be sprinkled with ashes or loam or pulverized peat or fine charcoal, and the floor should be cleaned off every week:

The yard should contain a grass plat, some fine gravel, slacked lime, dry ashes, and pure water. The nests should be lined with moss, heath or straw. Evidently the Dorkings are the best breed; they will lay an average of 185 eggs each per annum. Fowls with black legs are best for roasting, while those with white legs are best for boiling. If you want them to sit early leave the eggs under them. Fowls in their native habits never lay more eggs than they can hatch. Remember that no success can be expected from poultry-keeping if their houses be damp, cold, unclean, or badly ventilated; if their food does not approximate to that which they get in a state of nature, viz., a mixture of animal and vegetable food; if the water they drink be stagnant, the drainage of the manure heap etc., or if the strongest and handsomest be not bred from.

Editorial Gleanings.

OUR PUBLIC PARKS.

On Monday evening, Jan. 16th, the report of the Park Commissioners was sent in to the Board of Supervisors, and was read by the Secretary. Following is the report:

Office of the Park Commissioners,
San Francisco, January 9, 1871.

To the Honorable Board of Supervisors: Gentlemen:—The undersigned Park Commissioners, under and by virtue of the authority of an Act of the Legislature of the State of California, entitled "An Act to provide for the improvement of the Public Parks of the City of San Francisco," approved April 4th, 1870, have the honor to submit herewith a report of their proceedings and a statement of the receipts and expenditures, as required by Section 6th of said Act.

The Commissioners organized on the 3d of May, 1870, by the election of S. F. Butterworth, as President, and Andrew J. Moulder, as Secretary. The salary of the Secretary was fixed at seventy-five dollars per month.

SALE OF BONDS.

On the 6th of May, the Commissioners advertised, in accordance with law, for bids for Park bonds to the amount of $100,000, bearing interest at the rate of six per cent. per annum, with a notification that no bid under par would be accepted.

Sixty days afterwards, to-wit, on the 5th of July, 1870, bonds to the amount of $15,000 were awarded to A. Seligman at par—his being the only bid received; and on the 1st of August, 1870, fifteen bonds of $1,000 each, dated August 1st, 1870, and bearing interest at the rate of six per cent. per annum, payable semi-annually—the principal payable in fifty years from date—were issued to said A. Seligman, and in return therefor the sum of $15,000 in gold coin was received by the Commissioners. Abraham Seligman was appointed Treasurer, and his offer of one per cent. per annum on monthly balances in his hands was accepted.

THE GOLDEN GATE PARK.

Specifications for a minute topographical survey of the "Avenue" and "Golden Gate Park" and their connections with the adjacent city surveys were prepared, and a number of competent engineers and surveyors were invited to put in sealed bids, stating for what sum in gross they would execute the work, in accordance with said specifications. On the 8th of August, 1870, the bids were opened, and the contract was awarded to Mr. Wm. Hammond Hall, for the sum of $860, his being the lowest bid. Mr. Hall entered the field shortly afterward with a corps of assistants, and completed a very careful and accurate survey early in December. He is now engaged in the preparation of maps on a large scale, embracing all desirable information as a basis for the laying out and improvement of the Park and Avenues. It is expected these maps will be completed by the middle of January 1871.

APPOINTMENT OF A KEEPER.

On the 17th of November, 1870, the Commissioners appointed P. Owens, Keeper of the Grounds of the Avenue and Parks, at a salary of $75 per month. This appointment was necessary to protect the trees and shrubbery from waste by trespass, and to prevent unauthorized parties from intruding upon the premises.

A GREEN-HOUSE.

The Commissioners have taken steps towards the establishment of a green-house, on an economical scale, for the rearing of suitable evergreens and other trees and shrubs, to be set out on the Park grounds. By this means many thousand valuable trees will be obtained from the seeds at a comparatively small cost.

IMPROVEMENT OF THE AVENUES.

As soon as the maps of the surveys made are completed, the Commissioners propose to adopt the best plan attainable by competition for the laying out and improvement of the Avenue and Parks, and to proceed as rapidly as the means placed at their disposal will permit to carry the said plan into execution.

Appended hereto please find a statement of the receipts and expenditures of the Commissioners from the date of their organization up to the present time. We are,

Very respectfully,

S. F. Butterworth,
D. W. Connelly,
C. F. MacDermot.

RECEIPTS.

August 1st, 1870—From the sale of Park Bonds to the amount of $15,000 at par.....$15,000.00

EXPENDITURES.

Rent of office, nine months.....$	225.00
Advertising bids, sixty days.....	168.00
Lithographing, printing, etc.....	316.50
On account of Survey of Avenue and Parks.....	3,500.00
Salary of Secretary, eight months.....	600.00
Salary of Park Keeper, one month...	75.00
Engraving seal.....	15.00
Horse-hire for Commissioners visiting the Park.....	21.00
Office expenses, carpets, etc.....	63.05
Construction of green-house.....	356.05
Seeds.....	45.05
Total expenditures.....$	5,384.65

Leaving a cash balance on hand, January 9th, 1871, $9,615.35.

THE PRESIDIO RESERVATIONS.

On the same evening, A. B. Forbes, Supervisor from the Seventh Ward, presented the following preamble and resolutions, which were unanimously adopted:

Whereas, The Legislature of the State of California did, on the 22d of March last, pass the following concurrent preamble and resolution namely:

"*Whereas*, The Presidio Reservation is the property of the United States, and only a small portion of which is used for military purposes; and whereas, it consists of about seventeen hundred acres of land, lying immediately north of the city and county of San Francisco, and less than three miles from the centre of the business part of said city, and is the most attractive spot for a public park on the peninsula, skirting as it does the great Bay of San Francisco on the west, and comprising the

whole of the land sloping to the east, from the Golden Gate to the city; and whereas, much of said land is well watered and capable of cultivation, while a large portion of the remaining lands of the said city and county of San Francisco, which is not built upon, is drifting sand; therefore,

"*Resolved*, by the Senate, the Assembly concurring, That our Senators in Congress be instructed and our Representatives requested to use all means in their power, to secure the passage of an Act of Congress, dedicating the lands above described for the purposes of a public park."

Now, it is hereby resolved, That the Board of Supervisors of the City and County of San Francisco fully concur in the sentiments expressed in the foregoing resolution, and add their request to that of the Legislature, to their Representatives in the United States Senate and House of Representatives, to give to the bill now pending before Congress, which grants to the people of San Francisco the use of said lands for the purposes of a public park, their most energetic support.

THE AMERICAN SWEET CHESTNUT.

Once our magnificent forests in their native beauty and grandeur called forth the admiration and astonishment of European travelers and the early settlers and pioneers of this country; but over a large part of the older states, the glory and beauty have long since passed away. Only a few of the old monarchs of the forests of centuries growth yet remain—and although we are comparatively but a young nation, yet such has been our prodigality and wastefulness, that we already seriously feel the want of timber for fuel, building and fencing, and with the certainty of an ever increasing demand in the future. Our agriculturists justly feel alarmed at the prospects, and inquire, what can be done to supply our own need, and the wants of those that are to come after us? We answer first, practice the most rigid economy in the use of timber for any purpose; protect what remains of the native forest from the depredations of cattle, so that the young seedlings may have a chance to grow and supply the place of the older trees.

2nd. Plant a portion of the cleared land with forest trees, such as are best adapted to the soil and climate, and promise the most value for future use.

Over a very wide extent of country, embracing several degrees of latitude, the American Chestnut grows naturally, a most useful and valuable tree. After much inquiry and thought upon the subject, we do most heartily commend its cultivation wherever it can be grown.

First. Because it is hardy, grows rapidly from seed or the shoots, from stumps of parent trees, and affords the most valuable timber for building and finishing lumber, as well as for posts and rails for fencing.

Second. It is a beautiful tree, covered in early summer with its long pendent tassel like blossoms and rich luxuriant foliage, and in autumn with choicest nuts.

Third. It is adapted to a great variety of soils, thriving equally well on sandy, clayey, loamy, gravelly and rocky land, if not wet.

Fourth. When grown from seed in the nursery it can be transplanted with perfect safety and success.

Fifth. We have no native tree that equals the Chestnut for rapidity of growth and durability of its timber. Usually the more rapid the growth, the sooner the decay. To this general rule the Chestnut is a remarkable exception. While it grows more rapidly than almost any other tree, the timber when cut and exposed to the atmosphere will last longer than almost any other, as the posts and rails of very old fences can testify.

Sixth. The Chestnut possesses one great advantage over most other forest trees in reproducing itself. After having been cut down for timber, young shoots will start from the stump and grow with wonderful rapidity, in a short time reproducing more wood than was in the parent tree. Sometimes these shoots are numerous, but are always under the control of the owner to thin out as his judgment may direct, for his future use.

When grown especially for fruit, the trees should be set as much as forty feet apart, so that each may have room to form a wide spreading head. They will bear fruit in favorable localities from five to nine years from planting, and the fruit always brings a good price and is constantly increasing in value.

For timber, large quantities are grown in England, planted closely together, sometimes as near as five feet each way; planted in this manner they produce long straight poles for hurdles, hop poles, etc. In this country, where we require so much timber for fences, stakes and posts for grape growing, what would be more convenient on a farm than a fine large chestnut grove, where the farmer could at any time resort for timber with the assurance that from the apparent worthless stump left in the ground, where would another season spring up a growth, Phœnix-like, more vigorous and numerous than the trees removed. In this manner they may be cut, not only once or twice, but may be cut and renewed every few years for centuries, as the chestnut groves and forests in England fully demonstrate. With all the superior excellence of this tree, we wonder that its propagation has been so much neglected. Then we say plant the Chestnut, that you may enjoy its beauty and shade, its fruit and timber; and that you may leave a rich inheritance to your children; plant it on the broad prairies of the West, plant it on the thin worn out soils of the East, plant it in lawns and streets, plant it in orchards and groves. Some species with fragrant blossoms should be set among them to make the job complete. Say the various species of Lilacs, and Calycanthus.—*Gardener's Monthly.*

The Kern County *Courier* says: "We learn that Messrs. Beale and Baker having recently made a purchase of three thousand sheep, sheared and turned them into their range. A storm came up, and the next night about twenty-five hundred perished with cold." Perhaps this costly experience will teach others, besides these losing sheep owners, to have shelter, and proper root food besides grass, for sheep in the winter season. It is a pitiable lack of forethought only which originates such loss.

STEAM CULTIVATION.

We have now in California one of the Thompson's celebrated Steam Road-Wagons adapted to ploughing land by britching on gang-plows. The Standish Locomotive Steam Land Dresser, is soon expected from Boston. It is a California invention, very much improved, and now in the hands of Eastern capital for exploitation. Before sending one here, it is on trial on the prairies of the West, with a view to studying improvements. This is not a plough, because it does not cut a slice and turn it bottom upward. It does better; it cuts up the ground into powder, after the fashion of an inclined screw, puts in the seed and covers it, at the rate of two acres an hour, all in one operation. The depth of the cut can be regulated to twelve inches. Our wheat lands, by unremitting abuse, are notably losing strength. The scratch-depth of our culture averages three inches. Three inches deeper would renew the force of production for another decade. Now we are entering into the culture of ramie and sugar-beets, and deeper land-dressing becomes a necessity. The roots of ramie must have moisture to sustain two crops a year; and sugar-beets lose half their value by growing above ground, instead of below. When the beet has loose soil, it prefers to go downward; when the ground is impenetrable, it grows mostly above the surface, where it becomes green and unsugary. It gets abnormally large and lubberly—a big head and nothing in it. All such beets are rejected at the sugary. Deep land-dressing stands in place of summer irrigation. If we fill a deep sponge with winter rain, there will be summer irrigation from below.

British agricultural journals give us wonderful illustration of the increased product of farms that have adopted steam-plowing. There, locomotive-plowing is not attempted. The gang-plow is drawn with wire ropes across the field, by an engine that stands on a temporary railway at the head of the field. They object to locomotives traversing the ground, because the weight tends to pack the soil,

which should be as porous as possible. On the same grounds, horse-plowing is condemned.

At North Park farm near London, three fields on the same ridge, (the soils being alike and treated in the same way, except in plowing,) were tested in wheat. The first was plowed the usual way, and yielded twenty bushels per acre and a good crop of straw. The second had a sub-soil-plow to follow the furrow, and it yielded thirty bushels and thirty per cent. more straw of better quality. The third field was plowed by steam, twelve inches deep; and the crop was forty-five bushels per acre, with a proportionate increase in the straw.

Steam-plowing is becoming general in England. A farm of three hundred acres affords to keep its own machine; and for smaller farms, subscription plows do the work for hire. Land rents at much higher rates, when there is steam-plowing to be had. Our large landholders would serve their interests by introducing steam-cultivation here. The cost of horse-culture leaves small profit to our farmers who pay current prices for land. Sales droop; but steam-plowing would quickly work a favorable revolution in farming profits, and therefore also in the value of agricultural lands.—*Alta California.*

Cultivating Tomatoes.—The San Jose *Patriot* thinks a fortune can be made in the foothills on the eastern slope of that valley, by producing one single kind of vegetable, the tomato, before it can be brought to market from the Sacramento Valley. That paper says that although the more equable temperature of this latter region produces vegetables a month or six weeks earlier than they can be raised in the Santa Clara Valley, there is a belt of country between the lower foothills and the summit of the mountain range, where frost seldom falls, and there is but little change in the temperature. In this locality the tomato can be raised with perfect success, and the man who can bring it into the market at San Jose by the first of July can make a fortune the first year, as the vegetable commands a most liberal price when it first makes its appearance.—*Call.*

BANANAS IN BRAZIL.

A correspondent of the St. Louis *Republican* writes from Brazil: "The most wonderful production of this and all tropical countries, in my estimation, is the banana and its synonyme, the plantain. We have a dozen varieties—each with peculiar flavor and qualities. Some grow only eight or ten feet high—others twenty. The stalks are from six to twelve inches thick, but almost as soft and succulent as celery. Each of them bears one bunch of bananas, and one only, when it is cut down with a stroke of the *espada* to secure the fruit and give place to other stalks. And thus they grow and ripen perpetually all the year round. A great traveler has calculated that the plantain, on one acre of ground, will produce as much food as one hundred and thirty-three acres of wheat or forty-four acres of potatoes. The fruit constitutes the principal reliance of the poor, and is a luxury for all. It is good raw, roasted, baked, and indeed in every form, and equally relished by all domestic fowls and animals, which devour fruit, leaves, stalks and all, with the greatest avidity.

"The banana requires but a single planting for a lifetime—putting in the ground a single sprout or shoot from the banana patches, at a distance of twenty or thirty feet from each other, and on ground that it is always calculated to spare for that purpose, because it is impossible to extirpate the root. The one stalk gives more—springing out from the sides in the ground perpetually—and in a few years covering the intervening spaces, till the whole surface becomes a forest of fruit and foliage, with scarcely room to pass through the cool, overhanging arches. A banana or a banana patch is a beautiful sight, with the stalks and their produce in all stages of perfection, the broad leaves waving in the breeze and fanning in lazy repose, while the bodies of the trees bend under their luscious burdens, and would often break down with the weight, except from neighboring support.

"There are a hundred or two of bananas on a bunch, like grapes, and the bunches are gener-

ally as much as a stout man can carry. They should always be cut as soon as the fruit is matured—but always while the skin is yet green—and hung up in the shade to turn yellow, which improves the flavor. It takes about a year for stock and fruit to mature from the first planting, but there is never any more trouble with the crop, scarcely any hoeing or weeding, no culture, only 'slay and eat.' Certainly it is the greatest boon ever bestowed on the indolent tropics. A native, swinging in his hammock, with a bunch of ripe bananas hanging in reach on the one side, and a smouldering fire on the other, by which he may light his little cigar without getting up, is a most perfect picture of contentment."

PEAT AS FUEL.

California, Oregon, Washington Territory, and the Islands of the Gulf of Georgia, are all bountifully supplied with timber. In the Sierras, along the foothills, and throughout the entire coast range of California, the pine, the fir, the redwood, the live oak, the laurel, and many other less valuable kinds of timber, are to be found. Still, the abundance is by no means too great. In all the localities accessible to railroad and river navigation, the trees are being rapidly thinned out. This fact is ascertained by the advance in the prices of wood for fuel from year to year. The interminable forests of the islands and the coasts are required to furnish masts and spars for our shipping. Their remoteness from the market, and their value for the purposes named, must for years to come, if not forever, debar them from contributing to any great extent to the current fuel demand. The scarcity and inferior quality of our indigenous coals, prevent them from being generally used for domestic purposes, while the imported articles rule at costly rates.

In view of these facts, the subject of utilizing our other natural resources to obtain cheap fuel, becomes a matter of vast importance. Peat has been looked to, in this emergency, as offering the best substitute for the articles named. The supply in this State is literally inexhaustible. San Joaquin County, along its navigable water-courses, could furnish countless millions of tons of the crude material. Wisconsin and Illinois have tried the experiment of its use with entire success, and it is said Connecticut has enough peat-beds to keep all her railroads and factories in operation for hundreds of years. The question then arises, can we make it available, as an article of consumption in California? A Canadian named Napoleon Aubin has patented a process for the mauufacture of peat, and a Connecticut Company has put his invention to a practical test in that State. The cost of manufacture is said to be $2 per ton; and it is sold for $6 per ton to the Hartford and New Haven Railroad, which has agreed to take 15,000 tons annually. Heretofore their coal has cost them $9 a ton delivered at the stations.

A company for the manufacture of peat fuel was organized in this State nearly two years ago. They then claimed that they could put the article down in the city at such prices that it might be sold from second hands at $3 per ton. The lowest retail price of wood is $11 per cord, and of coal $12 per ton; so that at the above figures the saving to the consumers would be immense. The machinery imported by this company is now undergoing experimental trial on the "Floral Isles" of the San Joaquin River. Should it give satisfaction, the time will not be far distant, we hope, when peat, at less than half the cost of wood and coal, will form the staple of our daily fuel consumption. It is cleaner, clearer, and better than coal, and will burn to ashes without a flame. It is said, also, that a lump as large as a man's head furnishes sufficient heat to keep a vessel of water boiling for over an hour and a quarter. Whether this machinery serves or not, the Aubin invention has been proved, and will find its way to this coast so soon as capital discovers that it is to its advantage to bring it here.—"*Daily Morning Call.*"

YOUNG poultry need soft, rich food. Coarse, raw meal for the first two or three days is not much more fit for them than for a baby. Milk made into curd, a boiled egg chopped up; and after a little, mush made of flour and meal is recommended.

Cultivating Forest Trees.—A recent settler in Nebraska, who has apparently learned how to "labor and to wait," is planting a hundred acres of land with walnuts. He estimates that each acre will have at least six hundred and fifty trees, or sixty-five thousand in all. He calculates that in twenty years each tree will certainly be worth three dollars for lumber, ties, fence-posts or fuel—making nearly two hundred thousand dollars as the value of the whole. Admitting these figures to be within the mark, which we are hardly prepared to do, it must be confessed that if the proprietor's logic be true, nothing else that could be planted on the same land would pay so large a return. And then all the labor required is breaking up the land and planting. The planter thinks pine trees could be cultivated with similar satisfactory pecuniary success.—*Call.*

The Products of California.—The San Francisco correspondent of the Chicago *Land Owner* gives the following figures of the products of this State for the last year: With a population of 600,000, we are told there were produced last year, 20,000,000 bushels of wheat, 3,000,000 bushels of barley, 1,200,000 bushels of oats, 1,000,000 bushels of corn, 4,000,000 gallons of wine, 300,000 gallons of brandy, 220,000,000 feet of sawed lumber, 5,000,000 pounds of butter and 18,000,000 pounds of wool. Of the metals there were produced, 3,000,000 pounds of quicksilver, all the rest of the world producing but 3,500,000 pounds; $1,000,000 of silver and $21,057,851 of gold. Manufactures yielded $74,000,000, and the total value of industrial products was $182,000,000. When we consider that California is as yet only upon the threshold of her history, we may well hesitate to assign any limit to her future prosperity.

Another Mulberry Plantation—The Lower Lake *Bulletin* says Messrs. C. Hallin and G. Ammery have purchased a tract of land near the Pike County House, in Napa County, where they will immediately set out 10,000 mulberry trees, preparatory to entering largely upon the business of sericulture.

Horticulture in Common Schools.—The *Country Gentleman* says the culture of flowers, the planting of ornamental trees, with brief instructions as to their growth, might be introduced into every school as a recreative study—if the teachers have the taste and knowledge necessary. It gives an instance where a teacher, on his own motion, interested his pupils in the culture of ornamental plants, with the happiest results.

When Should Pigs be Weaned?—Eight weeks old is the best age. Seven will do. They should become accustomed to food such as is ordinarily given to hogs before weaning, and then there will be no need of any loss in growth by the loss of the mother's milk. If they are at all inclined to scour, one of the best preventives is an occasional day's feed of whole corn, or a few kernels with their other food each day. They should have all they will eat, and even if the farmer is under the necessity of buying corn to keep them along till his own harvest is ready in the fall, the growth will generally pay at least fifty per cent. over and above the cost.—*Hearth and Home.*

Oranges and Cork Oak.—The Visalia *Delta* of December 7th has the following:

"We have had extraordinary heavy frosts lately, but we notice that it seems to have no effect upon our orange trees; those that are in bearing look perfectly healthy and will undoubtedly mature the crop. There is a region along the margin of the foothills much more free from frost than the valley around Visalia, and there can be no doubt but that this region is as well adapted to the production of the orange as any portion of the State. We notice also that the few specimens of cork oak, that have been planted here are healthy, and have made a growth quite equal to that of our native live oak.

Pruning Trees.—A very great error is made in pruning fruit trees, by cutting away the small branches in the heart of the tree; all this wood should be left except the water-shoots or suckers; the fruit-spurs should never be cut away, for the best fruit is grown near the heart of the tree.

THE

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THE PINK. (*Dianthus*).

The Pink is one of our most popular flowers, and second only to the Rose in beauty as well as in fragrance; cultivated for hundreds of years, it will continue at all times to form one of the chief attractions in the flower garden. It is easily cultivated, and the soil and climate of California are calculated to grow it in perfection. The varieties are numerous and continually increasing from seeds. Although only the single flowers bear seed, yet double flowers are frequently obtained; the best varieties are propagated from cuttings and layers.

The classification of the pinks among the florists is not clearly understood, many are cultivated, but still more are known to the botanist, which we will at present omit. It will better serve our purpose to enumerate only the most prominent classes, the most important of which is

Dianthus Caryophyllus or Carnation Pink, the beauty and fragrance of which cannot be surpassed. The Carnations are again divided into several classes, and it is here where the florists differ and are puzzled; in order to cover the whole ground, we will make the following subdivisions: Picotees, Flakes, Bizarres and Carnations proper. Some contend that the Picotees are not Carnations, while we insist that they belong to the *Dianthus Caryophyllus*, and necessarily must be Carnations. It is true there is a marked difference between the Picotee and other Carnations in the outline of the flowers; but not so much so, but that it is entitled to be considered one of the subdivisions.

The Picotees have a white or pale-yellow ground, spotted with scarlet, purple, crimson or similar color. The shape of a perfect flower is round, the petals should be flat, and the centre should be well filled; the edges of the petals are smooth and not fringed, the flower-stock will grow three feet in height, on this account the Picotee is sometimes called the tree pink. By cutting the flower-stocks back, while young, bushier and stouter plants are obtained.

The Flakes differ from the Picotees, as they produce flowers with only two distinct colors which are in well-marked stripes through the entire length of the petals.

The Bizarres are irregularly striped and spotted, and have three or more colors, which are variegated in their disposition.

The Monthly Carnations (*Caryophyllus semperflorens*,) are an improvement on the older varieties; they flower with us during winter as well as summer, and are therefore much more desirable.

The art of propagating and cultivating the Carnation is very simple; cuttings may be made from September, and even earlier, to February in this country, and they may be planted with perfect safety in the open ground in a light deep sandy soil; if they can be

shaded for a few days after planting it is well to do so. Some of our florists plant them under glass, but we see no occasion for anything of the kind here, and consider it an unnecessary precaution.

There is a difference of opinion about cutting back the upper leaves; some advocating and others opposing. Our own experience justifies the cutting back before planting; roots will soon be formed, and the young plants will flower during the coming year. Wet soil is very injurious to the Dianthus tribe, while very dry soil and excessive heat are death to them. Carnations are also well adapted to pot-culture, but should be kept in the open air as much as possible.

Next in order is the Clove Pink—it is probably the parent of the Carnation. Its fragrance is powerful, the flowers are of one color and the petals fringed. It is a very desirable plant for the border.

We shall also mention the Feather Pink,(*Dianthus plumarius*) a very deserving class of pinks. Many of our readers undoubtedly have heard of the Scotch Feather Pinks which formed such an important feature in the English gardens. They are now neglected, but without just cause.

The Garden Pink (*Dianthus Hortensis*) is a very popular class of pinks. It blooms later than the Carnation. Its foliage is more grass like and its flower stem seldom grows over six inches in height. It is usually cultivated by division of the old root. The ground color is pure white or rose color with a dark velvet crimson or purple eye; sometimes almost black. If the petals have a delicate margin of the same color as the eye, it highly improves the beauty of the flower.

The China Pink (*Dianthus Chinensis*) deserves more attention than is generally given it. Both the double and single varieties are beautiful, flowering profusely during the entire summer, but they lack fragrance. They are easily cultivated from seed and flower during the first year. The double, as well as the single China Pink, produces seeds, and if the seed is taken from the double, it will yield a large proportion of double flowers.

The Sweet William (*Dianthus barbatus*) is an old and much esteemed class of pinks. It is raised from seed, and after the first year the best varieties may be propagated by division of the roots.

If a good collection of pinks is desired, we would advise acquiring the best varieties of Carnations by purchase and propagating them by cuttings. The others may be raised from seed to greater advantage.

We frequently hear complaints that the calyx of the double flowering pink splits open on one side, spoiling the beauty of the flower. It has been suggested that this may be prevented by cultivating the pinks in poor soil. We cannot agree with this proposition, as poor soil will certainly furnish poor flowers, but with a very little extra labor a small piece of string may be tied around the upper end of the calyx, which will keep the petals together, or an india rubber ring may be placed around the calyx which will prevent its irregular splitting.

INDOOR CULTIVATION OF HYACINTHS.

Editor California Horticulturist:—In a recent number of your very readable magazine, I was much interested with your article on flowering bulbs, particularly with your remarks on the Hyacinth, a favorite flower of mine. What you say in reference to the general neglect of bulbs, is too true, and almost unaccountable considering their ease of cultivation, but I have myself met with disappointment, on two occasions when I purchased bulbs. Some were not true to name, and others inferior in quality, being spongy and the trusses of flowers weakly and very poor, although I paid the dealer all he asked; this man although he has obtained some notoriety as a dealer in seeds, is a mean man and a mean looking one, and deserves to have his name mentioned, but I prefer treating him with contempt. My object in writing to you is to request the insertion of a few remarks on the indoor cultivation of my favorite bulb, the Hyacinth, the only objection to which is its over-

powering but delicious perfume when in bloom, but this affects only a few persons unpleasantly.

Hyacinths of course should have long since been in the glass, the flower-pot, or in the garden; if any one has been so neglectful as to retain them until now in some out of the way drawer or on some dry shelf, let them immediately plant them in some warm corner in the garden, and give them a season's rest, they may thus save them for next season. I always select the roundest, fullest and finest bulbs for the glasses, having due regard to the assortment of colors I anticipate when in bloom, the remainder of my stock I plant in pots and place aside. The Hyacinths in glasses should be kept in the dark till the roots are well developed, and the foliage begins to make progress, after which the closer they are brought to the light the better. The chief care they require is the change of water about once a fortnight. It should be poured away without disturbing the bulbs, then the glass and bulbs together should be plunged into a tub nearly filled with rain water, the bulb should be retained in position with the thumb and fore-finger of the left hand, a little water should be admitted into the glass and gently agitated so as to wash the roots and remove any impurity from the sides of the glass, which should then be refilled to within half an inch of the bottom of the bulbs, this bath is healthful to the bulb, foliage and roots, by removing any dust and impurities accumulated from the room, as well as sediment from the water; it is desirable that the water used should be as near as convenient to the temperature of that removed.

When the bulbs at first placed in the glasses have bloomed and lost the freshness of their beauty, they may be carefully removed, and planted about four inches deep in light sandy soil where they will complete their growth. If the Hyacinth grower has adopted my mode of treatment, and will now inspect those in pots, she will find a good assortment to supply the places of those removed from the glasses, these she will take from the pots one by one, carefully wash away the soil and tenderly coax the roots into the glasses. We have some now treated in this way, that look stronger and finer than those which were grown altogether in water; this process may be repeated if sufficient bulbs were potted in the commencement of the season, and have been kept in a cool and shady place.

Hyacinths forced in water cannot be expected to produce good flowers the next year, yet with careful treatment they will make a valuable addition to the borders. One singular advantage in bulb culture is, that provided the roots are tenderly treated they will bear any amount of removal, and thus the windows may be amply supplied with a long succession and a good assortment of Crocuses, Hyacinths Tulips, etc., etc.

HORTUS.

HYBRIDS.

Many of our readers are probably uninformed how new varieties of flowering plants are raised. The process is called "Hybridizing," and is effected by intermingling the pollen of the flowers of different plants.

In order to describe this process properly it is necessary first to give a description of the flower itself. In the centre of a perfect flower we notice the stamens, which differ in number. These stamens consist of two parts: the filament and the anther; the filament is the stem of the stamen, and the anther is a somewhat round or oblong body attached to the top of it. Within the circle of stamens, and in the very centre of the flower, are the pistil and ovary; the latter of which contains the seed when fertilized by the pollen, which is a yellowish powder contained in the anther during the development of the flower. The anther sheds some of this pollen on to the pistil, fertilizing it and giving life to the seed in the ovary.

Now Hybridizing consists in removing the stamens from a flower before they have fertilized the pistil, and in carrying the pollen of a flower of another variety to the first one, by

which means the pistil is fertilized. The consequence is that the seed so produced will develop into a plant, the flowers of which will be unlike those of either of the flowers operated on, and yet in some features resemble both. This process, however, can only be carried out effectually between flowers of the same species.

The *modus operandi* is simple and very interesting, but must be executed with care, and at the proper time. New varieties raised in this manner are called "Hybrids."

DESTRUCTIVE INSECTS.

We hear many complaints of the increased damage done to flowers and vegetables by various kinds of insects, as the mealy bug, the green-fly in green-houses, and the brown and white scale insects.

The green-fly is found on young shoots and buds, and is easily got rid of by fumigating the house with tobacco smoke, which does not in the least injure the plants. The mealy bug is found in the axils of leaves and stems, and is very injurious to grape-vines. Various cures have been suggested, some of which have proved very successful, not only in destroying the insects, but also in arresting the young growth of the plants. Some time since the Horticultural Society of Boston, offered a special premium for an effective remedy for the injury inflicted by plant-insects, and the result was that the application of a diluted solution of whale oil soap was recommended, and has proved to have the desired effect. The whale oil soap is dissolved at the rate of two pounds to fifteen gallons of water; the solution should be applied with a syringe, and should first be strained through cloth so as to remove all impurities which may stop the syringe. A very important feature in this remedy is that the solution which accidentally drops on the soil will kill any insect which may have its hiding place there, and that it is also an excellent fertilizer. The above solution will not in any way injure the plants, it also destroys the rose slug which has been very annoying during the last year in various localities.

The cabbage patches have suffered very much from the so-called Cabbage louse, so much so as in many instances to discourage the raising of that vegetable. The above solution can be applied here also, with an equally pleasing result. An objection may be raised that it consumes too much time, but we are inclined to believe that if the cabbage field is frequently sprinkled with the solution above described instead of syringing each plant, which would certainly take up a great deal of time, the effect will also be gratifying and satisfactory. The remedy is cheap and simple, and we can in very good faith recommend its general application. Try it, and inform us of the result.

PLANT LICE. (*Aphides.*)

These pests to the gardener are exceedingly numerous, they are subdivided by Entomologists into several sub-families which it is not our purpose to recapitulate, we shall content ourselves with a general description.

The body is short, soft, oval in form, about the 1-16th of an inch in length and usually of a light-green color, the legs are exceedingly slender and hair-like as is also the probocis; they subsist by suction on the juices of the plant which they infest; they attack in great numbers the soft shoots and young leaves, frequently completely covering them, exhausting and frequently killing the plant. At the hind extremity of the body are two small tubes or pores from which exude minute drops of a very sweet fluid; of this the ants are very fond, they do not injure the *Aphides* but the most friendly relations appear to exist between these two kinds of insects.

The Lady-Bug (*coccinellida*), of several species, both in its larva and perfect state appears to be its most determined insect antagonist, devouring it voraciously, indeed in the hop-gardens of England, when the curse of the *Aphides* is upon them, the advent of the lady bugs is prayed for as no farmer ever yet prayed for rain, and it is a curious circumstance that in those seasons when the plant lice swarm,

their antagonists are also in countless myriads, although at other times only in moderate numbers.

The female of the *Aphides* is apterous, (wingless), while the male is provided with two pair of wings, the upper ones being much longer than the body and about twice as large as the lower ones; they are nearly triangular in shape, and when at rest are held almost vertical.

The young are hatched in the spring, and soon attain maturity, this brood consists entirely of wingless females, which bring forth living young each producing from fifteen to twenty in a day; these young are also wingless females, and at maturity they also bring forth living young, which are also wingless females, and they in their turn bring forth living young of the same sex, in this way brood after brood is produced even to the fourteenth generation in a single season, and this without the appearance of a single male. The last brood in autumn consists of both males and females, the latter also having wings, these pair, stock the plants with eggs and then perish. Reaumur has proved that a single aphis in five generations may become the progenitor of about six thousand millions of descendants.

In the green-house the plague of plant lice is readily abated by fumigation with tobacco smoke; a chafing dish should be about half filled with red hot charcoal, all doors and windows should be closed, and refuse tobacco in a damp state should be thrown on, when, unless the operator is a most inveterate smoker,he had better retire; this should be done in the evening, it will not injure the plants and on opening the house in the morning, the insects will be found to have dropped from the plants; sprinkling with pulverized sulphur, or washing or syringing with soapsuds is advised by some. For the green-house we prefer the first remedy; for out door applications, as on rose trees, we adopt the syringing with soapsuds made by pouring boiling water on coarse soap, soft soap for instance, stirring it well, allowing it to cool, and then straining it before using. This process would be efficacious in clearing the cabbage tribe (*brassicæ*) of the pests, if perseveringly carried out, but it is almost sure to be relinquished as too troublesome to syringe every plant individually, especially when the plantation is large. We have adopted the plan of dipping the young plants before setting them out, in the cold soapsuds as prepared above, taking about a dozen at a time by the stems and stirring them around in it, then planting them. We believe in this.

A successful florist and gardener resident in the neighborhood of this city, informs us that he has found a very efficacious remedy in planting his plants of the cabbage tribe in alternate rows with camomile, (*Anthemis*), and similar herbs which seem obnoxious to these insects, this remedy may be further utilized, as the flowers of the camomile when properly harvested are of commercial value. In those districts where large crops of the cabbage family have been cultivated, and which have suffered from the pest, it appears to us that the safest plan is to gather as much stubble and other vegetable refuse as convenient on to the land during the dry season, and burn it over, this will destroy the eggs both on the rubbish and in the land, which should afterwards be well ploughed and cropped with some cereal on the rotation system, which will be beneficial in other ways besides in destroying the insects.

EXPERIENCE WITH HENS.—"P." writes: My experience with hens during several years has lead me to the following conclusions:

1st, Hens well fed and cared for, usually lay the first season daily, small or medium eggs, until they take a notion to set, which is generally when they laid two or three dozen eggs. If not permitted to set, they will begin to lay again in two three or weeks. Some hens, however, do not incline to set very often—these, of course, will not lay so constantly as those which are more ambitious to realize the fruit of their labor.

2nd, The second season, hens lay large eggs, quite too large to sell by the dozen, but seldom or never oftener than every other day.

3rd, Pullets hatched from eggs laid by hens more than twelve or fifteen months old, are apt to be like their mothers—to lay large eggs, but not daily.

Therefore, I would never keep a hen through the second winter, and never set eggs of hens after they have moulted, or of those that are more than a year and a half old.

LECTURES ON THE CONIFERÆ OF CALIFORNIA, BY PROFESSOR H. N. BOLANDER.

(CONTINUED).

Firs, (*Piceas*). Of these we have four species growing on the Pacific Coast.

1. *Picea grandis*, very generally distributed over California and the Rocky Mountains. It grows nearest to the ocean and in the gulches of the Sierra Nevadas at from 2,000 to 7,000 feet altitude. It is again found on the Eastern slope of the Sierras but in limited numbers.

The tree is cylindrical in form, its foliage dark green above and silvery glaucous beneath, the cones are five inches in length and rather narrow, it grows from 200 to 250 feet in height, the wood is inferior and it is not cultivated here.

2. *Picea amabilis* grows in the Sierra Nevadas, 7000 feet above the level of the sea. The cones are large and covered with a wooly-like substance. It is a tree of great beauty and should be extensively cultivated. Its timber is valuable. The tree has been neglected by our nurserymen. The seed of the *Picea amabilis* is generally destroyed by insects. Apparently good and healthy seeds have been sent to England and New Zealand, but on their arrival they were found alive with insects. The best way of introducing this fir into cultivation would be to obtain young plants from three to four inches in height, which would transplant readily. These can be found in very large quantities near the summit of the Sierras. If carefully packed there, these might be conveyed with safety to a great distance.

3. *Picea bracteata*, is confined to a small locality in San Luis Obispo and Monterey counties. Almost all of the trees have been cut down for the seeds. This tree is one of the most beautiful of Conifers. It is slender and the branches are well divided. The cones are four inches in length and two inches in diameter. Bracts are developed from between the scales of from one to two inches in length and are reflexed. The seed has been sold as high as seventy-five dollars per pound. It is a rather dangerous enterprise to obtain the seed, as the country is infested by grizzly bears and over-run by the lawless greasers. There are now some cone-bearing trees of the *Picea bracteata* in England.

4. *Picea nobilis*. This tree is found from Mount Shasta to the Columbia River; the bracts extending from between the scales are three parted. The tree was first discovered by Douglass and sent to England, where it is also now cone bearing. This tree is not cultivated here.

The cones of the *Piceas* do not drop, they open and discharge their seeds with the scales, leaving the spindle on the tree for several years. The *Piceas* have their leaves single on the sides of the branches, while the leaves of the *Abies*, which are also single, grow all around the stem.

Spruce Firs (*Abies*), of these we have also four varieties growing in California.

1. *Abies Douglasii* which is generally associated with the *Pinus ponderosa* in the gulches and on the banks of rivers and creeks in the Sierras; on the Coast Range it is generally most plentiful on the outskirts of thick forests of redwood. There is nothing more beautiful than a group of the California chestnut oak and the *Abies Douglasii* when growing together. This variety is also found rather plentifully in the Rocky Mountains. Trees have been seen of thirteen feet in circumference, the bark is of a greyish color, the branches drooping, the tree is very picturesque, the timber is valuable for lumber, the seeds ripen early in September. Marin county and Belmont, San Mateo County, furnish excellent seed. This tree is cultivated rather extensively in California.

2. *Abies Menziesii*, is found all the way from Mendocino to Humboldt Bay and Alaska, the foliage is of a bluish-green, the trunk is from six to ten feet in diameter, and the bark smooth and black; the timber is used for ship-knees, and is therefore of a tough nature. The *Abies Menziesii* is also found in the Rocky Mountains, but not in the Sierras, it is sometimes called the Black Spruce, (*Abies nigra*).

3. *Abies Mertensiana.* This is not the *Abies Canadensis* or Hemlock spruce of the East, which is of a greyish color while the *Mertensiana* is of a cinnamon shade—this is one of the most beautiful trees for lawns and gardens, its branches are slender and graceful, and it deserves extensive cultivation.

4. *Abies Pattoniana* (*Pattonii*). This is recorded by the railroad survey as *A. Williamsonii*; it grows on the Sierras of California and Oregon, at a level of not less than 8,000 feet, the trunk is from six to eight feet in diameter, and it grows two hundred and fifty feet in height; the tree is conical, and the branches drooping. This is also known as *A. Hookeriana*, cone-bearing specimens are growing in England under this latter name. It is difficult to obtain seeds in good condition, and the best mode of propogating would doubtless be to procure the young plants, which can be obtained in large quantities in the Sierras.

We come now to the *Libocedrus decurrens*, which is doubtless a different tree from the *Thuja gigantea.* It has a rough bark, and the foliage is spiny; the cones are like a pea-nut with two wings, bearing two seeds in each wing; it seldom attains the height of one hundred feet, the trunk is thick below, and rapidly decreases in size. This tree is found to grow exclusively on very dry hillsides, in volcanic soil. The seeds are shed about the 1st of September.

Thuja gigantea, which is also called *Thuja Craigiana*, has a smooth bark, and the foliage is also smooth. The cones are scaly; it grows from one hundred and fifty to two hundred feet in height and is rather slender. The *Thuja gigantea* is not found in very dry soil; it is covered with a dense foliage and is of a graceful habit.

Next in order are the *Sequoias*, of which there are two growing in California.

1. *Sequoia gigantea*, (*Wellingtonia gigantea—Washingtonia gigantea,*) called also the Big-Trees of Calaveras. It was formerly believed that there were only a few of the *Sequoia gigantea* growing in this State, but it has been found in large quantities, both small and large trees, in the Sierras, at from 4,500 to 8,000 feet above the level of the sea. It has been found in a silicified state, in large quantities, both in the Baltic Sea, in Switzerland, in Greenland, and in England, where at one time it must have covered the ground. The leaves are sharp-pointed and scattered around the branches, the foliage is of a light green, the cones are ovate and from two to three inches in length, with prickled scales.

2. *Sequoia sempervirens* (redwood). This peculiar tree is found from San Luis Obispo up to Mendocino, close to the ocean. North of Mendocino it makes room for the *Abies Douglassii* and the Chesnut oak. It occurs once more higher north, on this side of the line of Oregon, where it is found in large quantities. A few have also been found in Oregon. It grows in foggy regions and on sandstone formations. There is nothing more grand than to contemplate the ocean of redwood trees when the fogs roll in over the woods. The amount of rain is larger wherever redwood forests are found, and it is a fact that moist and springy lands, known to be such while the redwoods covered the ground, have dried up and shown no signs of water after the redwood trees have been removed. An example of this is furnished in the hills at the back of Oakland, where redwoods covered certain localities at one time. This tree grows to the height of 300 feet, and is found at from ten to fifteen feet in diameter. The timber is valuable.

The redwood was found in England and described as the *Sequoia Langsdorfii.*

Redwood forests are not destroyed by fire, which may burn up all the leaves and branches, but the tree will send forth new shoots from its charred trunk and limbs. Trees which have been cut down and allowed to remain on the ground, have formed, after a few years, new growths of young trees which have grown into forests; anything left of a redwood tree will sprout again, it therefore is a difficult task to clear land overgrown with this timber.

This tree is now largely cultivated by the Italian Government on account of its many good qualities.

POPULAR BOTANY.

CHAPTER V.

In our last chapter we gave the several parts that go to make up an exogenous stem of one years growth. To simplify, and show the relation that one portion bears to another, we shall refer to them again in the order met with, in passing from the centre to the outside of the stem.

First, the *pith*, which belongs to the cellular or horizontal system.

Second, the *medullary sheath*. Third, the *layer of wood*, both of which belong to the woody or vertical system.

Fourth, the *medullary rays*, a part of the cellular system which passes through the wood horizontally, and serves to connect the central pith with the bark.

Fifth, the *liber*, which is the inner portion of the bark, but belongs to the woody or vertical system. The medullary rays pass through this liber to the outer bark.

Sixth, the *outer bark*, which is included in the cellular system, and is divided into two parts: First the *green or cellular layer*; Second, the *corky layer*.

Last of all the *epidermis* or skin, which covers the entire plant.

Herbaceous plants develop no further than this, and at the close of their season of growth, perish. Trees and shrubs are constantly adding to this growth, year after year, and this is the next point to command our attention.

As the season of new growth arrives, a kind of mucilage makes its appearance between the separable bark and wood. This is called *Cambrium*, and is supposed by some to be the source of nourishment to the forming wood. All we can say is, that in it, or by it, new cells and vessels are formed, and thus a new layer of wood comes into existence as the previous layer had done. At the same time the liber has also a new layer added to it, but only on its inner side. Each year this action goes on, producing at regular intervals new layers of wood and bark. These layers, always like the first, are intersected by the medullary rays.

On the examination then of an exogenous stem by a cross section, we find the wood in concentric layers, with the bark as an outer ring, and the pith as a central point. As each year adds but one of these layers to the stem, we are enabled by this means to determine the age of that stem with positive accuracy.

In the case of some stems, these rings or layers are not so plainly marked, and this is more likely to occur in the tropics or even in sub-tropical countries where the growth is not stopped by the severity of winter, but continues more or less all the year. Still in these places there is a period of rest for the plant, which is generally during the dry season.

The layers of newly made wood, of which we have spoken, form a number of tubes which reach from the roots to the extremity of the stem, and, serve to conduct the sap upwards to the leaves. For this reason the new wood is called the *sap wood*. The roots absorb from the soil the required amount of salts, such as potash, lime, etc., which are conveyed by this system of tubes to all parts of the plant. A portion of these salts are deposited in the woody tubes, and so in the course of time their size becomes lessened, and at last completely closed. Thus the wood grows hard and dense as it advances in age, and it is then called *heart wood*. After a time the heart wood is not required in promoting the growth of a stem, and may decay without injury to the plant.

The woody layers, when once deposited, remain forever afterwards unchanged, (with the exception of this action of the earthy salts), in position and character, and are only effected by decay. On the other hand the bark is constantly undergoing change, both from age and the manner of its formation. The liber or inner bark is increased in the same way as the wood, by annual layers, the new layer being formed next to the wood, pushes the older bark outward. The tubes of this liber are used as the medium of the return circulation of the plant, and they like the heart wood, are solidified in time by the deposits of earthy salts, which have undergone certain changes in the leaves of the plant.

Soon the outer or old bark becomes useless and dies. Unable to adjust itself to the growing wood within it, it becomes torn and split and even finally decays. The tissues of the bark are composed of fibres which from their character are often used as materials for ropes, etc. The juices of a plant when elaborated in the leaves, return through the bark, and in their passage leave behind them certain qualities. Thus medicinal and certain other principles are found only in the bark.

As the old bark and the heart wood of a stem may decay and die without detriment to the growing properties of a plant, we see at once that the sap wood and liber are the only parts of the stem by which the steady action is carried on year after year, and to them is due the permanent existence of the plant.

SEEDLING FRUIT TREES.

Much has been lately written in the Eastern States, about new varieties of seedling fruits, we feel that this matter is entitled to our serious attention. It is generally understood, and our own experience is corroborating, that stone fruits will reproduce themselves more truly to their original qualities than other fruits, with the exception perhaps of the cherry.

It has frequently occurred, that when the seeds taken from very fine peaches have been planted, the young trees produced have yielded as good fruit if not better, than the parent tree, although they have been neither grafted nor budded; and we say no more than we can vouch for, when we state that a large majority of the peach trees raised from seeds of excellent fruit, have produced, under proper treatment, fruits equally as good as the trees from which the seed was obtained.

In Germany the well known German prune is almost exclusively propagated from the seed. Some others are also raised in this manner. Very many new and valuable varieties in fruits are annually produced from seeds, but we believe that many of our fruit growers are over anxious to produce something new, and very often what is claimed as a new variety is but a peculiarity of the fruit, entirely due to local circumstances. However if one new and deserving variety is produced out of 50 claimed as such, it is a matter of importance. We advise therefore the persistent cultivation of a certain quantity of seedlings from seed of superior fruit. And particularly in California should this matter receive universal attention, as only in this way shall we obtain standard varieties of fruits adapted to our climate. In fact it should be the ambition of our fruit growers to raise representatives of all the fruits, from the grape to the blackberry, from the apple and pear to the currant, for only thus will they become thoroughly acclimatized, and then only will the flavor be equal to the appearance. California has done well, so far, in fruit growing, but we believe there are many opportunities for improvement.

In this connection we refer with pleasure to a report in the *California Farmer* on six varieties of pears raised by Mr. B. S. Fox of San Jose, on seedling trees.

Fox No. 7.—A dark russet pear, size of the Seckel, super excellent, rich and luscious, a melting pear, ripe in December.

Fox No. 8.—A medium sized pear, melting, very high flavor, a most valuable pear worthy of extensive cultivation.

Fox No. 68.—A medium size pear with a remarkably high aromatic flavor, melting and juicy, a great acquisition.

Fox No. 150.—A small sized pear, but of very extraordinary flavor, like a delicious melon, melting and very juicy.

Fox No. 172.—A handsome formed pear like the St. Michael, and of same size, sweet and juicy in the extreme; high aromatic flavor; a most admirable fruit.

Fox No. 185.—A medium pear, light color, handsome form; size of the Seckel; a late keeper; not superior in quality, but will prove a grand market pear, as it will keep to January or February.

AGRICULTURAL DEVELOPMENTS.

At a recent meeting of agricultural men in in the south, the Hon. Horace Capron, Commissioner of Agriculture, was present by invitation,—and as he delivered a most interesting address before this convention, we shall repeat some of his well considered remarks, which can be applied with equal force to California. In alluding to the slow progress in developing resources, he cites the following as prominent reasons for this untoward state of affairs.

"*First.*—A wasteful and slovenly system of agriculture, which is the curse of our whole country, has been practiced in our cotton-states.

Second.—The multiplication and utilization of the raw products of agriculture by manufacture has been ignored or discouraged. Culture has been restricted to a few crops, and the policy of buying nearly every thing needed to eat, drink or wear has been encouraged.

Third.—Labor has been mainly restricted to a servile class, thus becoming a badge of dishonor, rather than a crown of glory which it is; a large portion of the people formerly lived (and are living now—Ed. Hort.) in comparative idleness or unproductive employment, and the intellect and ambition of the influential or ruling class has been expended upon politics, to the neglect of material development."

"The business of agriculture should be an industry, and not a speculation. The insane pursuit of specialties has long been a curse to American agriculture. A whole community runs wild upon hops, when they are selling at fifty cents per pound, and in two years they are scarcely worth the price of picking. Extravagance begotten of high expectations is forthwith followed by bankruptcy. Wheat brings two dollars per bushel, and whole states become wheat-fields, while every other interest languishes, until the bread crop becomes so abundant as to be fed to swine in preference to shipment for human food."

Again he says, "There is no reason why we should send abroad for a pound of sugar, though our home production last year was but ten per cent. Your fruits in wonderful variety, including those of the tropics, should annually add millions of dollars to the wealth of the country. Scores of new and useful plants should be added to the list of those already in cultivation."

In regard to our manufacturing interests he says "If England, by the magic of her labor can make a dollar's worth of your cotton produce two dollars, and if France can make it yield three, why should not your people with willing hands to work and abundant water and fuel for power, manufacture a large portion of your crops, at least into yarns and coarse fabrics, and thus add to the annual value of your industries a hundred millions more?"

In his closing remarks he adds, "Look not for additional labor to the coolies of China, or to the people of Europe, until all your people of whatever color, condition or capacity have full employment for mind and muscle in developing the wonderful capabilities under your control. The practical question of the day is not, Where shall we procure more labor? but rather, How can we utilize and profitably employ the varied capacities, tastes and inventive powers of every individual of our present population? What can each accomplish with the best results? What can be done for the employment of men practiced in no skillful employment? What can be done for indigent women and even for children dependent on their own exertions for subsistence, for education and for advanced social positions?

"I am satisfied that a new era is dawning, that the rule of one idea is weakening and that the diversification of production has already commenced opening a career of activity and a vista of beauty hitherto unwitnessed in the brightest days of this nation.

ANAHEIM will probably make over a million gallons of wine this year, for shipment. Grasshoppers have made great devastation in the Cucamungo vineyards, fully one-third of the vines having been destroyed by them.—*Call.*

SORGO (*SORGHUM SACCHARATUM*) AS A FORAGE PLANT.

This plant is a native of the north of China, where it is cultivated to a limited extent. Its height is from 12 to eighteen feet; the stalks decreasing in diameter very gradually. Tapering and drooping leaves spring from the nodes which are eight to twelve inches apart. When the seed ripens the stem becomes smooth, with a siliceous deposit, and it hardens as the starchy substances are converted into woody fibre.—*Gardeners' Chronicle, Eng.*

In 1854, Mr. Browne sent from France some seeds which were distributed by the Agricultural Department of the Patent Office. For a time it received but little attention, being cultivated to but a slight extent. Since 1855, however, its cultivation has been on the increase, and it is now one of the great crops of the country. In the North Western States, where it is principally grown, there was in 1864, 366,670 acres of Sorgo under cultivation. For sugar, the plant has turned out a failure, and at present its chief recommendation is as a forage plant. For this purpose it promises to be a valuable acquisition, and farmers in California would do well to devote a share of their lands and attention to it. Grass yields a ton to a ton and a half of hay to the acre, while Sorgo will yield from two tons to nine tons of dry fodder on the same area. It is grown with success on all lands where corn can be grown. Deep, loose, warm soil, even of poor quality produces the sweetest and most juicy stalks. Its growth is increased very much by irrigation. The seeds should (previous to planting) be soaked in warm water until they show signs of germination, which will occur in about six days. If the planting is done in rows, they should be about four feet apart; and if in drills, from four to six inches between each seed. Its subsequent culture is much the same as that for corn.

As yet we can give but little as to its cultivation in this State, but we hope in a short time to be able to record some observations on this plant, and its adaptability to our climate, with its true value as a forage plant.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION V.

In our last number we gave a selection of plants for a small garden, which require either training upon the house, over the verandah, the out-buildings or the covered seats; also, such as may be supported by stakes until by proper cultivation they are able to support themselves. These are denominated shrubby plants, they make more or less woody growth, and will do well under ordinary treatment. All of the plants particularlized are well adapted for the front garden, and should they be neglected for some little time they will not perish for want of attention; although they cannot be expected to flower or flourish as well as when properly treated.

But there is another class of plants which are equally as well entitled to our admiration and care, and without which the flower garden looks bare and unfinished, these are the herbaceous plants, or border flowers. Who would be without the Pink, the Pansy, the Verbena, the Petunia, the Violet, the Primrose, the Wallflower, many of the bulbous rooted plants, and some of our most exquisite annuals? But it must be admitted that this class of plants require more care than the former, their roots are not as strong nor do they penetrate the soil as deeply, their nourishment is derived from the surface soil and surface moisture, and as these resources are quickly exhausted, a fresh supply of manure must be added and incorporated with the soil every year, and in California frequent watering (at least every other day) is indispensable, particularly where the soil is light and sandy; frequent stirring of the surface of the soil around these plants is also very beneficial. We say therefore that unless the owner of a flower garden is inclined to bestow a little additional labor on the cultivation of these herbaceous plants, it will be better to do entirely without them.

After having decided how much time and care can be devoted to the flower garden, and having made the selections accordingly, it is advisable to consult the gardener on the ar-

rangement of walks and flower-beds, also on the proper disposition of shrubs. A proper place for the Evergreens, is in the centre of larger beds, a small irregular belt of evergreen and flowering shrubs may also be planted near the front fence. Roses, Geraniums, Fuchsias, and other flowering shrubs should be planted in the borders, at least eighteen inches to two feet from the walks, and from five to six feet apart. If herbaceous plants are desired, they should be planted between these, and those of low and dwarfy growth should be set out near the walks. Petunias, Pansys, Verbenas, bulbs, &c., may be planted in groups, or in beds by themselves, or they may be scattered throughout the borders. Where there is a great deal of room, the planting in groups or beds is preferable.

In planting, all deciduous shrubs, particularly roses, should be cut back extensively. When plants are taken from pots and the roots are found to cover the ball of earth, it is advisable to loosen the outer roots before planting, it is also beneficial to well incorporate a shovel-full of old rotten manure, with the soil where the new plant is to be set out; and we think that in all cases a plant may be set one inch deeper into the soil than its former position.

We consider it an important rule in the general arrangement of shrubs around a garden, that the taller growing varieties, should occupy the outskirts, while the smaller kinds, should be placed nearer to the house; in regard to the disposition of plants in beds, the taller varieties should be placed near the centre, and the dwarfish growing kinds, nearer to the edge.

If it is desired to have a grass-plot in a garden of this grade, it should be rather free from flowering shrubs and plants; no plant will thrive well if surrounded by the sod, and if this difficulty is to be overcome by digging up the soil around the plants, the grass-plot will lose a great deal of its effect, it will be much better to cut out a bed of an appropriate form, and cultivate it entirely with flowers, so as to have it surrounded by the grass, this has a good effect which will be increased by filling the bed with one certain class of plants only.

The best grass-plot is formed by sowing a mixture of two parts of Kentucky blue grass (*Poapratensis*), sometimes also called the June grass, and one part of red-top grass, (*Agrostis vulgaris*), mixed with a small quantity of white clover. The clover is valuable in quickly producing a close sod. After sowing, the ground should be well and evenly rolled or pressed down; we must here call the attention of gardeners, particularly to the necessity for sowing thickly, in order to produce a good sod. The many disappointments endured by those seeking a grass-plot, are attributable to too much economy in the quantity of seed used.

PUBLIC IMPROVEMENTS.

After the article "Public Parks," which appeared in our last number had been handed to the printer, our Park Commissioners submitted a report of their proceedings and a statement of their receipts and expenditures to our honorable Board of Supervisors, which report was also published in full in our last number. This statement shows a larger cash balance on hand than we anticipated, over $9,000 is still unexpended. We have met with many persons who complain that this amount is not immediately expended, but we see no reason why any one should find fault with the Commission in this respect. We believe the Commissioners are justified in their action.

There are but three things that could be undertaken by them at present with the amount of money on hand.

One is to advertise for plans, taking as a basis the topographical survey lately furnished, and to invite competition by offering premiums for the best. This we believe the Commissioners propose to do as soon as possible, and we consider this an important step.

Another is the covering the sand hills with some kind of vegetation, so as to prevent the continual shifting of the sand; we think that some experiments in this direction would be very desirable, and would not require much money. The sand hills over which the strong winds from the ocean now sweep so mercilessly,

continually changing their topographical configuration, must sooner or later be covered with some vegetation, and the sooner these experiments are made, so as to arrive at some conclusion as to how it can be done best and cheapest, the better it will be both for the park and for the whole community. If the first or second experiment should prove successful, we know that many of our capitalists and landowners will avail themselves of the experience, and in a few years we may succeed in covering these almost unapproachable sand regions, sufficiently to make them available for further improvements. We are inclined to believe, that had $1,000 been expended by the Commissioners in experimenting in this direction, they would have had by this time some very satisfactory data on which to work. No time should now be lost in inaugurating such a series of experiments and doubtless some important results, and an immense amount of good will follow, which but few of us can at present foresee.

A third step towards active work will be the providing of a stock of trees for planting. This, the Commissioners expect to do by raising them on the ground as far as practicable. We understand that some parties offered to transfer their whole nursery stock, glass and all, to the Park grounds at a reasonable figure. If we are correctly informed, the offer was reasonable. The Commissioners did not accept it, we believe, for some good reasons. We must take into consideration that after paying for the plans which must be had, probably not more than $6,000 will be left, and unless some one is ready to purchase more bonds, which we can hardly expect, no more money can be obtained by the Commissioners until the next Legislature meets, who may feel disposed to facilitate the selling of the Park bonds, or may open some other resources for the increase of the funds of the Park Commissioners. It would be an easy matter to purchase eight or nine thousand dollars worth of stock and thus expend all the money on hand, but we must bear in mind that after the trees and shrubs have been acquired, they must also be taken care of. We think that the course pursued by the Commissioners is correct so far, excepting that no effort has been made to arrest the sand-drifting alluded to above, and, providing that the raising of trees on the ground is carried on by a competent person. The Commissioners should bear in mind that nothing should be cultivated there at present excepting such as it is known will answer the purpose. All other work for improving the Park grounds must be subject to the grades, levels and conditions of the plan adopted and therefore the Commissioners should confine themselves to the three points defined above.

In obtaining a proper plan for the Park, we apprehend some difficulties will occur. The draughtsman who projects a plan or design is almost entirely controlled by the amount of money proposed to be expended in its execution. The man for instance who furnishes a design, upon the completion of which one million of dollars must be expended, will be very likely to produce a far superior, or at least more attractive plan, than one who bases his design on a suggested expenditure of $300,000. In order to do justice to all parties who may compete, the amount of money proposed to be expended should be stated approximately at least. Furthermore, parties from the East may come into competition, and may produce plans which might answer every purpose there, but may mislead those who are to judge upon the merits of all plans presented in regard to their adaptibility to our peculiar climate and local circumstances. It seems to us, that it will take some experts, men of local and climatic experience, to decide upon a plan best adapted to our special wants.

We have something yet to say respecting the Presidio Reservation, which has been prominent lately in connection with Parks. But we must postpone our remarks for want of space.

A MAN on King's River, Fresno County, has raised two crops on one piece of land last season—the first being a fine yield of barley, after which the land was ploughed and corn planted, which has produced one of the finest crops on the river.—*Call.*

AGRICULTURAL AND HORTICULTURAL WORK FOR MARCH AND APRIL.

Our publication day being on the 15th of each month, one-half of the time for the work requisite during that month has passed before our readers are in possession of the magazine, we therefore propose, to keep them posted a week or two in advance, regarding the work necessary to be done during the coming month, our remarks therefore in this chapter are applicable to the latter half of March, and the month of April.

The planting of Evergreens and deciduous ornamental trees, as well as fruit trees, should have received special attention during the past two months, yet a great many people have neglected to do so, and consequently as many if not more trees will be planted during the next sixty days, as have been set out since the 1st of January. But very few persons appreciate the necessity for early planting, although the advantages of so doing have been so often demonstrated. Trees which are planted after this month, (March) should be set out with especial care, the ground should be deeply ploughed, and the holes should be deeper and wider than when planted earlier. After planting, the ground around the trees should be mulched with fresh manure, hay or straw.

In the kitchen garden all those varieties of vegetable seeds which have been delayed on account of the cold weather, may now be planted. Beans may now be set about two inches deep, and at the rate of six or seven in a hill, which latter should be from two to three feet apart. For bush beans, good varieties, are the early Valentine as a strong bean, and the butter bean as a stringless one. Early China and white marrowfat are good for shelling. For running beans which require to be supported by poles or brush, the best is the large Lima.

Cucumbers may be planted in the early part of April in hills about six feet apart, which should have two to three shovelfuls of old rotten manure well incorporated; from eight to ten seeds should be set in each hill, and then should be covered about ½ an inch deep. When the plants are well up they should be thinned out to three or four of the strongest; good varieties are the Long green, and the Early frame.

Cucumbers for pickling, should be planted later.

Mush Melons, Water Melons and Squashes, may also be planted.

Cabbage and Cauliflower plants should now be transplanted from the seed beds, and should be set out about two feet apart in the row.

Tomatoes and Peppers may be transplanted to the open air during April.

Okra is a southern vegetable which may be raised with success in California, the young plants should be raised in frames, and transplanted in April about two feet apart.

The Egg plant is a tender vegetable, and should be treated in the same manner as the Tomato, but it requires more care in transplanting, as if once set back or chilled it hardly ever recovers, it is well therefore to cover it up after transplanting.

The flower garden now begins to present a more cheerful appearance, and the young growth is everywhere pushing forth rapidly. All kinds of tender bulbs may now be planted, such as Dahlias, Tuber-roses, Amaryllis, &c., &c., also the more tender flower seeds, the Asters, Balsams, Phloxes, Immortelles, &c.

Hyacinths and Narcissus are now in full bloom, and here and there we see a display of fine collections. These bulbs should be more popular. Tulips are also developing their first flowers, but hitherto we have not noticed any good specimens here, except some grown by Mr. Seitz on Ellis St., who, however, keeps them under glass, we repeat that the later varieties will present a far better appearance. Primulas, Pansies, Wall-flowers, Snow-drops, Crocus, Daffodils, are now some of the chief ornaments of the flower garden, and will continue to be so for a month longer; these in connection with the continuous blooming of Geraniums, Roses, Fuchsias, Heliotropes, Pinks, Verbenas, Laurustinus, Polygalla, Japanese Quince, Mesembryanthemum, and others, give to our California gardens a lively appearance at this time of the year.

All herbaceous plants should now have a frequent hoeing of the ground around them; in clayey and shaded places snails may be troublesome, but a strong application of lime will drive them away or kill them.

Young plants of Pansies which have developed three or four strong leaves, may now be transplanted, and if a shovelful of old rotten manure is incorporated with the soil where you intend to set out the young plants, they will be much benefited.

We will now direct the attention of our readers to a very erroneous practice, that of planting seeds too deeply, particularly of annuals, these should never be covered more than ¼ of an inch deep in the soil. Another bad practice is to sow flower seeds broadcast over the garden, when the different kinds should be set in patches by themselves that they may be better taken care of while young, and also to be more effective while in flower.

Parlor and green-house plants should receive extensive airing and a little more frequent watering as they advance in growth. If fresh cow manure dissolved in water can be moderately applied once a week, it will prove very beneficial.

SWEDISH COFFEE.—A correspondent of the *Independent*, traveling in Sweden, was immensely delighted with the coffee served on the steamboats and in the hotels. "At Upsala," he writes, "we determined to find out how they made such perfect coffee as we had just drank, and stepped into the neat kitchen of the little hotel; and this was the report: Take any kind of coffee pot or urn, and suspend a bag made of felt or very heavy flannel, so long that it reaches the bottom, bound on a wire just fitting the top; put in the fresh ground pure coffee, and pour on freshly boiled water. The fluid filters through the bag, and may be used at once; needs no settling, and retains all its aroma. The advantage of this over the ordinary filter is its economy, as the coffee stands and soaks out its strength instead of merely letting the water pass through it. 'Do you boil it?' inquired the learner. 'Na-a-a-ay,' said the maid, in simple astonishment that any one should be so wasteful as to send the precious aroma away in steam; should rob that prince of food of that evanescent something which constitutes his nobility, and reduce him to mere aliment. As soon would one think of throwing away that drop of sunshine, charged with all the summer's gold which lies at the throat of a bottle of Johannisberger."

A SUGGESTION.

We noticed a few days since in a wool circular a suggestion which we considered valuable to our farming friends, and we reprint it believing that if adopted the results will be beneficial.

"We consider it advisable to appeal to the good sense of our farmers to add a few head of sheep to their general farming stock, as is done in Canada. These sheep will be a benefit to their farm in eating the grass which other stock do not consume, and giving the best manure in return. These small herds can be better cared for than large ones, they are more easily kept clean and their wool will always fetch a higher price than others."

We know that it is usual in England to have a flock of sheep on most farms, in fact it is considered one of the main sources of profit; in many instances they are bred on the farm, in others they are purchased in a lean condition; in the latter case the farmer procures them after he has gathered the bulk of his root crops; the sheep are folded by means of hurdles over the fields on which these crops have been grown, the hurdles are shifted so as to pass the flock regularly over every part of the field, and by the time the farmer has thus got rid of the refuse of his root crops, and any other fodder he does not wish to harvest, his fields have been well and evenly manured (sheep droppings and urine are considered very fertilizing) and his sheep are in prime condition for the market; if his root crops do not find a ready sale he retains his flock and thus utilizes both and watches the market.

Frequently in the spring of the year when a grain crop looks thin and weakly, a flock of sheep is turned on to it, and they by cropping it down, setting the soil to the roots with their small feet, and manuring it, will restore it to vigor and the produce is almost always abundant. Sometimes when a farmer has not a flock of sheep of his own, he will borrow one from a neighbor for this purpose.

Sheep kept on a farm become very tame, and are very prolific, the ewes usually dropping twins, in some few instances triplets.

Their fleece is much heavier than when kept in a half wild condition in large flocks, and their carcasses are also of a greater weight and much fatter; and it is a great convenience to the farmer to be able to occasionally change his diet from pork and bacon when he would not kill an ox. This is especially the case in Australia, where small flocks are becoming utilized in this manner as the farming interest increases.

There are some few hints also in the same circular (of Messrs. McLennan, Whelan and Grisar,) which we highly approve, relating to the breed of sheep to be thus utilized, these we also add hoping our friends will avail themselves of the suggestion.

"Most of the flocks at present in this country would doubtless be much improved by the infusion of a little blood of long-wooled sheep. The introduction of the Cotswold and Leicester breeds of sheep into this State has proved a success in most instances. Undoubtedly, the length of staple and adaptability of the fleece thus raised has rendered California wool desirable for many purposes for which they heretofore were not suitable. With the increasing demand for long wool, together with the well established fact that other countries can grow short fine wools cheaper than California, it would certainly seem to be the most profitable course for sheep farmers here to produce long, sound wool."

LINOLEUM.—A substance is now manufacturing from flax-seed called linoleum. It is said that it will supersede India rubber—which it very much resembles, and of which it possesses most of the properties—in the various manufactures in which it is used. Like India rubber, it can be dissolved into a cement and used in the manufacture of clothing. It can be used for the coating of iron or wood, or for coating ships' bottoms. It is as good as common cement, having properties similar to the marine glue made from India rubber and shellac. It is readily vulcanized by exposure to heat, and by this means becomes as hard as the hardest wood, and capable of fine polish. The variety of uses to which it can be applied in this form will at once suggest themselves to the reader. Hitherto it has been made solely to produce floor cloth, for which it is well adapted.

SHERMAN ISLAND.

Editors Horticulturist.—My theme this time is "Quality versus Quantity." It is well known that this State as compared with the others in the Union, stands unsurpassed in her climates, soils and productions, yet how little is really known of her actual capabilities.

My object in taking up this subject is to instill into the minds of our agricultural and horticultural people the necessity of growing nothing but the best of everything in all their various departments; let us instance vegetables. As a general rule, our market is not as well supplied with choice vegetables as the Eastern cities are; to remedy this defect our gardeners must make a different selection of seeds and varieties; different from those with which they are now furnishing the table. In times past, *Quantity* was all that was thought of, the larger the vegetable the easier to serve up, but a different class of people have arisen among us, a different element, and their taste is different. Now, Quality is indispensable, size is a matter of indifference; all that is required is good vegetables. We will instance the cabbage, cauliflower, tomato, celery and the potato. For the past two or three years, gardeners and seedsmen have been earnestly endeavoring to obtain new and valuable varieties of these and other vegetables; thus Quality is beginning to find its way into our markets, and the table will now be graced with choice vegetables, which will impart to the taste a luxury heretofore unknown.

In my experience in growing seeds for the market during a number of years, this has been fully illustrated; what was called good ten years since, is now cast aside as worthless, good vegetables at a dinner are like good wine, they give life and tone to the feast. It is the same with fruit. There are a great many varieties of all kinds of fruit that could well be dispensed with, 10 varieties of choice apples are all that are needed in our market, and if these are a standard selection, then, as in the East no others will be sought after, and their value will be established.

What is richer to the taste, or more agreeable to the palate than a delicious pear, say the Bartlett, the Seckel, and three or four other varieties in their season. These would suffice us instead of a list of twenty or more sorts as is now the case. Good fruit of all kinds is like unto gold well refined, it always brings its true value.

The Peach, the Cherry, and the luscious Grape when raised for the table, of choice select varieties, are like a choice flower garden, indispensable to a well regulated home or farm; good qualities of everything are far better than bad qualities of any kind.

D. L. Perkins.

LILIES AND THEIR KIND.

A small garden should be filled with floral gems, but it should also be a *multum in parvo*, a collection of specimens of varied beauty, representatives of all the great families, both of flowering and flowerless plants, which are cultivable in the open ground. In their selection, novelty has much to do, fashion more, and individual taste and researches something. I would here like to suggest the adoption, with flowers, of the system now pursued by ladies and their advisers with regard to dress, namely, a revival of the old in combination with the new: Louis XV. skirts and draperies, dyed with hues supplied by recent chemical discoveries, produce effects which most men pronounce to be charming. We thus convert Watteau's pictures into *tableaux vivans* with the improvement of new colors, fabrics, and faces. Our parterres admit of a similar kind of renovation.

Amongst old-fashioned flowers, let me speak up for the Lilies; the newly-arrived strangers of that noble family will speak up for themselves. No small garden should be without a collection of Lilies, even if restricted to one single bulb of each leading species or variety, as an economical beginning; for they obey the law of increase and multiplication. Two lancifolium rubrums, bought in pots last summer, are now nine, great and small. Lilies do not require, like the Gladioli, to be taken up and stored away from frost every autumn. Indeed they seem to prefer to be left quiet in their sites for two, three, and four years at a time, at the end of which period they require to be lifted and separated to prevent overcrowding by their own progeny of offsets. Although they do not like to be kept very long out of the ground, and will not bear tossing about like Tulips and Hyacinths, their period of rest is quite sufficient for the purpose of sale or interchange. While growing they require only ordinary care, and are not attacked by many enemies. He must be a slovenly gardener who would let them be ravaged by slugs and snails. Less obvious at first, and less suspected in their origin, are the injuries committed by a pretty small scarlet beetle, found crawling amongst Lily leaves, mostly in pairs, in April and May. These spoilers, conspicuous to the eye, are easily caught, and should be destroyed relentlessly, for their eggs give birth to an ill-favored larva, which simply looks like a lump of dirt, being hidden beneath its own excrement. Knowing what they are, nothing is easier than to get rid of them as fast as they appear. Both the filthy grubs, and the smart perfect insects disfigure the plants by gnawing their stems and leaves.

Another recommendation is, that a parterre of Lilies is quite within the reach of a moderate purse. The only species which can be called at all expensive (I quote Louis Van Houtte's Catalogue of Bulbs, &c., No. 128—F., 1869; the prices charged by other nurserymen will not be widely different) are giganteum, 16*s.*; auartum, from 4*s.* to 8*s.*; and Brownii, from 3*s.* 3*d.* to 5*s.* But the first of these may be provisionally omitted, because its hardiness has not been ascertained, except in certain favored localities, while the great beauty of the remaining two makes them well worth the money they cost, especially remembering that they are hardy perennials gaining strength and blooming more profusely with age, not to mention the probability of their giving offsets and seeds. The merits of auratum are already well known. Von Houtte's description of Brownii is, "Magnificent hardy species, with noble foliage; flowers three

times as large as the White Lily, interior creamy white, exterior rusty purple. The stamens are of a rich chocolate, a distinctive characteristic with this species." But compare these reasonable figures with the prices asked for Orchids, and for almost every new introduction, as well as for almost every newly-raised variety of flower.

Other beautiful Lilies are so cheap, that it is not worth while depriving oneself of them. Lancifolium speciosum album is 5*s.* the dozen; lancifolium rubrum (still handsomer), 4*s.* the dozen; longiflorum (white, large, and long, tube-shaped flowers, with petals slightly turned back, and yellow stamens), 2*s.* per dozen; Thunbergianum aureum nigro-maculatum (of a beautiful nankeen spotted with black), 6*s.* 6*d.* per dozen; while that good old favorite, tigrinum, the Tiger Lily, now pushed out of most gardens by upstart intruders, is to be had for 1*s.* 3*d.* the dozen. Van Houtte does it the justice to call it "a well-known but ever beautiful variety, attaining four feet in height, reddish orange flowers spotted with black, petals much re-curved;" but he patronizes a new variety (8*s.* to 16*s.*), tigrinum splendens, "taller in habit, with flowers marked with larger spots, and altogether finer than the old sort." It is certainly a striking improvement, but does not, I think, whip its parent into nowhere. For half-a-crown a dozen you have Lilium umbellatum, in mixture, superb varieties, with very large cup-shaped flowers of divers shades, dazzling red, etc., suitable for the formation of masses on lawns, which are exceedingly effective when seen from a distance. These varieties, amongst the hardiest known, attain a height of from two-and-a-half to three feet. The White Lily (a stately plant, if ever there was one, and which would be puffed up to the clouds if it was new or rare), is 1*s.* 8*d.* per dozen; the doubled-flowered White Lily, 6*d.* a-piece.

So much for inexpensiveness. To give an idea of their variety would require the enumeration of their qualities item by item; I cannot, however, help noting pyrenaicum, lemon-yellow, with scarlet anthers, besides others with petals of a similar hue; grandiflorum, magnificent deep blood-red, star-shaped flowers; and the well known (to our grandmothers) scarlet Turk's-cap.

Many Lilies do well in any ordinary garden ground; they all thrive in light soils with a liberal admixture of leaf-mould. This, being especially suited to the Japan Lilies, may be advantageously employed for all. It ensures good drainage, is less penetrable by frost than soils that retain moisture, and also admits of deep planting—another preservative against frost. Some gardeners take up their Japans every year, at the beginning of October, replanting them immediately after having removed the offsets and the old roots. Lilies grown in pots make showy ornaments, and will even rise to the dignity of specimen plants; but their most appropriate place is the open ground, whether border or bed; because many of them emit a perfume which, though sweet, is so powerful as to be unbearable in a closed apartment by any but the hardest heads and the robustest nerves. Outdoors they brightly fill up the considerable gap between the blaze of spring flowers, and the glowing hues of autumn.

I would not have my own Lily bed consist entirely of these plants alone, but would help it out with a succession of bloom obtained from near relations, and even from utter strangers. True, there is the pleasure of expectation as well as of actual enjoyment; but there is no reason why we should not, while watching the growth of the lilies, be gratified by something more than hope. A Lily parterre may stand alone, or there may be two planted exactly alike; or correspondent pendents, with a reversed arrangement, in great number, may answer to each other. Suppose there is but one, whether regular or irregular in shape, I would have its outer edge bordered, according to the size of the garden, either with Box or with Irish Ivy; inside of which I would plant a fringe, either of Snowdrops or Crocuses—yellow, purple, or white. Within those, a ribbon of single Anemones (mixed), eighteen inches or two feet broad. Sown (for economy) in May, they

would begin flowering in the following October, and afterwards bloom at the regular season. The whole of the interior should then be assigned to liliaceous bulbs, planting a few Crown Imperials (in two varieties, orange and yellow) at symmetrical stations, and making the outer rank to consist either of Dog's-tooth Violets or Fritillarias, or both. The centre is the place for the tallest Lilies (giganteum sends up a famous shaft), advancing the places of different sorts towards the outside, in proportion to their diminished stature; and when the Lilies are over, the bed need not be bloomless, so long as there are Colchicums and autumnal Crocuses to be had.—*The Gardeners' Chronicle and Agricultural Gazette, London.*

THE SUGAR BEET IN ENGLAND.

As beet sugar and its manufacture is at present commanding considerable attention in this State, we have thought it not inappropriate to make the following extract from the monthly report of the agricultural department at Washington, and thus show what is being done in the same line in England.

"Mr. Caird, in an account of the progress of the English beet-root sugar manufacture, states that the sugar made by Mr. Duncan, at Lavenham, in Suffolk, from beets grown by the farmers of that neighborhood, has brought the highest price in the market for sugar in crystals. Mr. Duncan is now converting into sugar about 400 tons of roots per week. This is the third year of the Lavenham factory and of the growth and manufacture of English beet-root sugar on a scale equal in extent to that of continental sugar factories. The analysis of the roots in the first two years showed the quality to be satisfactory, but chemical and mechanical means for extracting the sugar proved defective. There have been many other difficulties inseperable from a new undertaking, inexperienced hands not being the least, but perseverance and the exercise of great intelligence have triumphed, and the successful introduction of a new and profitable agricultural industry into England has been accomplished. Mr. Duncan has satisfied himself that the growth and manufacture of beet-root sugar can be carried on in Suffolk with quite as much success as in the north of France.

"The total value of the syrup produced last year is £960. The expenditures, including cost of roots, government duty, and working expenses, do not exceed £660. So that there is a handsome balance for interest on capital and for profit, besides the value of the refuse pulp sold for cattle feed, and thus returned to the land. The roots are richer in sugar this year than usual, but, on the other hand, sugar is very cheap. The conversion of the roots into sugar has more than doubled their value, though purchased at a price more remunerative to the farmer than any other article he produces. The land is not impoverished, as nearly all the feeding properties of the beet are returned to it by being fed to cattle. The whole available surplus labor of an agricultural parish receives indoor employment in the sugar factory during three or four months of the slackest season, and at good wages. Capital is profitably employed, and trade of all kinds is benefited, while the general supply of sugar is augmented.

"Mr. Campbell, of Buscot Park, Berkshire, is conducting a similar experiment on a large scale, so far as the growth of the beet is concerned, but with the intention of being able to convert the root either into sugar or spirit, as may at the time be most profitable. The weight and quality of the sugar beet grown on his estate this season cannot be surpassed. Thus, in Berkshire as in Suffolk, the soil and climate have proved equally suitable. There is no appreciable difference in the climate of the counties adjoining, and it is assumed that on all soils on which mangolds are now advantageously grown in the counties from the Wash to the English Channel, the sugar beet may be gradually introduced.

"While Mr. Caird feels great confidence in the future profitable extension of this industry, he offers a word of warning. It did not pay Mr. Duncan the first or the second year. But the business is quite new in the country, and

men are not yet educated to it. Enough has been done, however, to show that success may be anticipated by those who can bring to it a like command of capital, skill, and perseverance."

FUNGI AND ITS STRUCTURE.

BY JOSIAH HOOPES.

From an Essay Read Before the Penna. Fruit Growers' Society.

Gentlemen, we will now pass to another source of disease in our fruit trees, and one which is making terrible depredations in most sections of our country,—it is no less than that of *Fungi*, the lowest forms of vegetation.

The minute parasitic species are so insiduous in their approach, so infinitessimal in size, and increase with such fearful rapidity, that they prove no mean enemy indeed to contend against.

And now some remarks on their general structure and mode of propagation.

Of the larger species, including *Puff-balls* of various kinds, *Mushrooms* both edible and poisonous; the delicious *Truffle* (Tuber cinbarium) and the highly nutritious *Morel* (Morchella esculenta), I shall have nothing to say, although exceedingly interesting in their structure and classification. I merely propose to inquire into the microscopic members of the family,—those parasites which cause the pomologist so much vexation and loss in various ways. Our notification of their existence, is mainly visible in the form of *Mould, rust, mildew, smut*, etc., and wherever these are detected, disease will surely follow. The reproductive fragments of fungoid plants, known as spores, are not unlike the seeds of flowering plants, inasmuch as they germinate and produce a new generation after their kind. They are unlike, because the spores contain no embryo as in the higher orders. As the manner of reproduction in these cryptogramic plants is not altogether fully known, my remarks on this subject will have to be somewhat speculative, although founded on scientific facts. It is often questioned among horticulturists, how the spores of one season can contaminate or find their way to the young plant of a succeeding season's growth. The prevailing theory is as follows: When we closely examine the spores, we find they are not unfrequently larger than the stomates or breathing pores in the cuticle of the leaf, which it is destined to destroy; thus admittance in this direction is rendered impossible. The next plausible suggestion is, can they not penetrate into the roots? But here another barrier is interposed, the spores being as large as the root cells. We now call to our aid a mycological fact, which will assist us in our inquiries: Spores undergo a primary change before forming young plants, as after falling to the ground, and coming in contact with moisture, they throw out slender hair-like fibres, which enter the apertures in the roots, and thus work their way into the tree itself. Or, as is sometimes the case, changed into a fluid state, become absorbed, and thus enter into the vessels of the plants. Some species are reproduced in the same manner on the external portions of trees.

It has also been surmised on reliable grounds, that seeds of plants not unfrequently become inoculated with the poisonous virus, and during germination and growth, carry with them the destroying power, which, not until maturity shows its baneful presence. The first process of development of fungi, is from the spore or seed-like fragment, to the *mycelium;* the latter corresponding to the roots of plants. This is in the form, either of fine silky threads, or, more or less closely compacted cells. Says Berkeley, the eminent English Mycologist, "there can be neither a perfectly free mycelium, nor free organs of reproduction, except in aquatic ærial species, which are of very rare occurrence; even if floating, there will be something in the shape of roots, and the spores will always spring directly from the threads at the expense of the end ochrome."

By some naturalists, Fungi have been considered capable of spontaneous generation; but I firmly believe this view to be diametrically opposed to those beautiful and unchanging laws that Nature has so plainly shown in all the higher orders of creation, and which are, at the same time, so essential to vitality.

"That Fungi," according to Berkeley, "should spring up everywhere under fitting conditions, is readily explained by the enormous quantity of fruit which they produce."

"Multitudes of spores find at once a proper nidus, and throw out their mycelium, which in some cases, may exist for years without producing fruit, and in other instances, are essentially perennial, yielding an annual crop for almost an indefinite period." "Other spores are wafted about in the air, where they may remain for a greater or less period, till, obeying the natural laws of gravity, they descend in some distant region." It is said the Trade winds carry spores of Fungi thousands of miles before they are deposited.

The reproduction and dissemination of most fungoid plants, depends very materially upon the condition of the atmosphere; hence we find that many of the diseases caused by their presence, have been attributed to atmospheric changes. The terrible Potato disease is the result of a very destructive mould, which, during warm and moist weather, luxuriates in a wonderfully rapid manner; but, on the contrary, soon perishes, should a drought set in. It has been proven that this disease is caused by a mould, but it is not necessary for me to enter into its history at this time. Some species of Fungi, however, grow as readily during a dry season, as if it were rainy, but as a rule, they are far more numerous in wet weather. "A moist autumn, after a genial summer, is most conducive to their growth, but cold wet summers seldom are productive." Again, quoting from Berkeley, "The localities they affect, are as various as their forms."

Wherever there is moisture combined with a proper degree of temperature, together with organic matter, Fungi are capable of existence. The spores of the *Penicillium*, which infested the bread some years ago in Paris, to such an alarming extent, were capable of sustaining a heat equal to that of boiling water, without losing their power of germination, and it is certain that they can bear many degrees of frost without injury. Some species at least are to be found in a growing state, wherever the soil is actually free from frost, and many seem to flourish most vigorously at a low temperature. Sweden with its various soil, large mixed forests, and warm summer temperature, seems to produce more species than any part of the known world; and next perhaps in order is the United States, as far as South Carolina, where they absolutely swarm." As a general rule, they decrease in numbers as we approach the colder regions, and increase toward the temperate. In Torrid climates they are prevalent, but much less frequent than further north. Several species of fungoid plants present two distinct and dissimilar states, before arriving at maturity, and what were formerly considered different plants, are at present known to be one and the same. This is termed *dimorphism*. An excellent illustration of this change, is presented in the Fungus familiarly known as the Barberry Mildew, and at the same time affords a useful hint to the practical observer. English farmers for many years have contended that this disease was contagious, and liable to be introduced into their wheat fields from the Barberry, when growing in near proximity. The Cryptogramic botanists endeavored to prove, that the mildews affecting each, were two entirely distinct plants, nowise related, and therefore the contagion was simply impossible, and the farmers were voted by unanimous consent, ignorant and superstitious. Unfortunately for the assertions of the scientific gentlemen, what were formerly considered two distinct plants, are now *known* to be only forms of one and the same species, and able to disseminate the disease from Barberry to Wheat. This same character is often illustrated on the leaf of the Rose: the under side being covered with a complete net work of mildew, whilst above are seen numerous spherical yellow bodies, producing spores. Both states belong to the same plant. The mildew is merely a primary condition, which afterward developes into beaded bodies bearing spores. Fungi, when in the form of mildew or mould, although but in the earlier stages of growth, produce disease and death by appropriating the juices of the plant upon which

they are found, as in the case of all parasites. They also impede a free circulation, by destroying the respiratory organs in the epidermis, known as the stomata. In regard to the very small size of the seed-like bodies produced by Fungi, an English Mycologist has recorded, that "a single spore of the *Polyporous cæsius*, measures one 10,000th of an inch in extreme length, and in width, one 20,000th of an inch, thus taking the inconceivable number of 200,000,000 of spores to cover one inch superficial." M. C. Cook, in his interesting little work on Fungi, says: "On the *Goatsbeard*, (Tragopogon pratensis) the leaves have the appearance as if sprinkled with gold-dust, and each speck of dust is a little cup containing spores, or more properly *protospores*.

Each of these bodies is doubtless capable of reproducing its species, and if we compute 2000 cluster-cups as occurring on each leaf, and we have found half as many more on an ordinary sized leaf, and suppose each cup to contain 250,000 spores, which again is below the actual number, then we shall have not less than 500,000,000 of reproductive bodies, on one leaf of the Goatsbeard, to furnish a crop of parasites for the plants of the succeeding year. We must reckon by millions, and our figures and faculties fail in appreciating the myriads of spores which compose the orange-dust produced upon one infected cluster of plants of Tragopogon." "Nor is this all, for our number represents only the actual protospores which are contained within the peridea; each of these on germination, may produce not only one, but many vegetative spores, which are exceedingly minute, and individually may be regarded as embryos of a fresh crop of cluster-cups." Most of you are acquainted with the sooty patches on wheat. It has been computed that 8,000,000 spores of this fungus, would merely cover one square inch of surface. "For every ear of diseased wheat," says Cook, "10,000,000 spores have been distributed for a future crop." A curious feature in Fungi is, that they exhale carbonic acid, and absorb oxygen, thus being diametrically opposed to *Flowering* or *Phænogamous Plants*; and rendering them useless in keeping up the balance between animal and vegetable life. To this cause is attributed the absence in their cells, of *chlorophyll*,—the green coloring matter seen in the higher orders of vegetation.

FUNGOID DISEASES.

We will now pass to the consideration of the disease caused by the presence of Fungi; but, in so doing, I will merely select such as have proven the most injurious. The Grape appears to offer a fair field for these pests, for we find different species luxuriating upon it, at every period of the vine's growth, and in various ways preying upon the fruit with remorseless avidity. Commencing with the terrible Grape disease, that ravaged the vineyards of all Europe, and which was entirely unknown previous to the year 1845. We are informed that it was at first attributed to numerous foreign agencies, until the true cause was discovered by Berkeley. Finding it belonged to the old genus *Oidium*, he gave it the specific name of Tuckeri, in honor of the gentleman by whom it was first brought to notice. The presence of this Fungus is first detected by the appearance of the vine, which changes to a yellowish hue, soon a white stud-like substance is noticed, and the little parasite then emits a musty odor, and spreads with almost inconceivable rapidity. In the later stages, when the Fungus is about developing its fruit and discharging its spores, dark-colored spots take the place of the mildew,—the leaves curl up, and the grapes split open, or dry up in most instances. The very valuable paper on this subject by a French Vineyardist,—H. H. Mares—has lately been incorporated in Flagg's work on European Vineyards, which is well worth a careful perusal. In regard to the species of mildew affecting our hardy grapes, I am afraid I cannot give you any very definite information, but I am decidedly of the opinion, that they are all quite distinct from the *Oidium Tuckeri* of Europe, although nearly related to it. Of the many varieties of grapes grown in the Northern States, those of foreign parentage are the most susceptible of mildew and rot, so that by our glass structures we are enabled to produce

an atmosphere, uncongenial to the growth of these cryptogams. Dr. Engelmann, of St. Louis, describes two forms of our Grape disease under the names of "Brown rot," and "Black rot," both of which I have detected in this State. For a full description of these, I will refer you to the "Trans. of the Acad. of Science, of St. Louis," vol. 2, p. 165, 1863. Prof. Silliman also refers to the same, in the *Horticulturist*, vol. 18, No. 10. During the past summer, my attention was called to a curious disease in the vinery belonging to our worthy Secretary at Germantown. I procured a few specimens of the fruit of a Black Hamburg, and placing a portion of the diseased skin under a microscope, I soon found unmistakable signs of Fungus, which, upon examination, presented two very distinct forms. One, which I presume to be nothing more than the Mycelium, was very like the usual grape mildew in general character. The other, and more dangerous form, was of a nature to create suspicion in the minds of every grape grower, for it answered in many particulars the greatly to be dreaded *Oidium* of Europe. The small rust-like spots and patches, were not unlike the *puff-ball* family, on long stems,—those most advanced, splitting open, and discharging their myriads of dust-like spores. This last form I take to be the culmination of the disease, and was similar to many species of our worst parasites.

As an article of food the tomato is not only nutritious, but it possesses many valuable medicinal qualities. It is one of the most powerful aperients of the liver and other organs, and can be substituted for calomel. It is also stated that, before long, experiments now being made will result in producing a chemical extract from the tomato that will ultimately supersede calomel in the cure of disease. Diarrhœa has been successfully treated with the tomato alone, and it is said to be an excellent remedy for dyspepsia and indigestion. Cooked or raw, the tomato as a daily food is one of the most wholesome articles in use.

To Prevent Hens Eating Their Eggs.—Give plenty of lime, old plastering, oyster shells, powdered bones, etc.; supply a little animal food, such as bits of fresh meat from the table, or any fresh meat chopped fine; besides, provide good large nests well filled with leaves or hay, and set in snug darkish corners, away from observation. Then your hens will not eat their eggs and will lay abundantly.

TREATMENT OF SINGING BIRDS IN CAGES;

I always use unpainted cages for my birds, as I think them more healthy than painted ones; birds are apt to pick the paint, which often poisons them. I consider those cages, best which are made of mahogany, with a draw in the bottom for convenience of cleaning, China or glass cups should be provided on each side to hold the seed and water, and there should also be a cup of water large enough to bathe in, but not to drown them. They cannot be healthy without plenty of clean water, both for bathing and drinking. The cage should be large enough to allow them to fly about and enjoy themselves.

Canaries usually pair about the middle of March, when they should be placed together, each pair in a large breeding cage; if brought together before, they will fight and sometimes injure each other; if they agree, they will soon begin to feed each other, they must then be supplied with a box, two-and-a-half or three inches square, or a basket made for that purpose which should be hung up in the cage for them to build their nest in; they should also be supplied with material for building. I have found hemp rope, cut about one inch long and picked to pieces, and the white hair from a calf's tail to be the material they prefer. They will commence their nests several times, and pull them to pieces again; but when they begin really in earnest, they will work very fast.

When the hen has laid one egg, she will begin to set, and lay an egg every day till she has four; in two weeks from the time the first egg was laid, it will hatch. During the time of setting, the birds must be attended to very carefully, giving them a variety of food, such as hard boiled eggs chopped very fine with bread, and bread and milk, as well as seed of several kinds. The milk should be scalded to prevent their becoming sick during incubation, which frequently happens unless this precaution is taken. The white of eggs should never be given to the young.

The cage should be examined by lamp-light while there are young birds in it, to ascertain if there are mites about it, which are small red

insects barely perceptible to the naked eye. Unless these mites can be kept out of the cage, it is useless to attempt to raise or keep birds. A single drop of sweet oil on the sole of each foot of the female, when she commences setting, will prevent the attacks of these insects.

Once a month the birds should have a small pinch of saffron in their drinking water. Great attention must be paid to cleanliness ; the cage should be thoroughly cleaned once a week, and well dried before the birds are returned to it, except while the bird is setting, when it must not be disturbed; the draw should be taken out every day, cleaned and sprinkled with fine white sand.

If it is necessary to handle the birds,it should be done carefully, as they are very tender. Great care should be taken not to frighten them. I have known a valuable Canary bird so frightened, that he never sang again. Strangers should never go very near to the cage, and no one should look into the nest, while the bird is setting, as she may desert it.

I have frequently allowed them to go out of their cages, always taking care to close all places, doors and windows, whence they could make their escape. They will fly around and alight on the heads and shoulders of those present, and sometimes, even on our hands; and if there are plants in the room, they seem to take great delight in flitting around them. When tired, they will return to their cages; but it may be necessary to place a piece of apple or something tempting inside the door of the cage to attract them back; but they will soon become so tame, if frequently permitted to fly around, that they will not need much coaxing to induce them to return.

Ripe fruit in its season, sugar, chickweed and lettuce are excellent diet to keep them in health; cuttle fish-bone and bread or crackers should always be in the cage for them to pick at, but they should not have rich cake; if they have the dumps, they will set on the perch with their feathers rough, not taking the trouble to dress their plumage; a drop of sweet oil put on the sole of each foot will cure them. A little scalded milk on some bread, will cure the diarrhea. When moulting, they they should have less seed, but be supplied with soaked bread, lettuce leaves, fruit, etc., to allay the natural fever.

In winter they should be kept in a warm room, but not near the fire; in summer the cage should be hung out of doors a part of the day, to give them air, but should always be shaded from the sun ; they should not be exposed to dew or rain.

As I am averse to shutting up our native songsters in narrow cages, thus depriving them of their liberty, I keep none but Canaries and Finches, who having been bred there and thoroughly domesticated, suffer no deprivation.

How Sand Drifts are Checked in France.—From the Loire to the Gironde, the shore, continuing low and sandy, is indented by several bays, generally protected by islands, and presents the two scaports of La Rochelle and Rochefort. From the mouth of the Gironde, to the foot of the Pyrenees, the coast is but an unbroken line of sandy downs, interspersed with marshes, the only opening to vessels being the basin of Arcachou. Drifting sands have invaded large tracts of good soil, and within the last two centuries a number of scattered cabins, private residents, convents, and even whole villages, have been thus completely buried. Of late years such ravages have been partially stopped by the planting of beach grass, boom and pine trees.

A Marin County Duck Ranch.—Mr. Hugh McKennon has a duck ranch in Bolinas, Marin county, where he is now feeding about 2,500 of these birds. He has a very complete arrangement of buildings, pens, etc., for his flock. The ducks have constant access to a large pond of fresh water, and also to a part of Bolinas Bay. He sends during the egg season, an average of 1,050 eggs per day to this market down to 250, as the season falls off. The ducks consume an average of fifty-five tons of the best wheat, during the year, and he is constantly renewing his stock by selling the old, ones and raising young ones.

Editorial Portfolio.

In the last number of this journal, we presented the subject of irrigation for the consideration of our readers, as one of importance to them and the State. It is our purpose in this article to draw their attention to a kindred topic, that of planting forest trees.

Like irrigation, this subject is commanding considerable attention in other countries, and commends itself with especial force to California. Forest trees are at all times things of beauty; lending grace and life to the valley, grandeur and majesty to the mountain top. Upon this account alone, if there were no other, we should plant trees. But when we come to look closer into the workings of the great laboratory of nature, we find them not only pleasing to the eye, but useful in many ways to the health of our people, and the fertility of our fields.

In California large portions of the country are destitute of trees of any kind, while in other parts, the woodman's axe has wrought dire destruction to our native timber. It is now time that our agriculturists, and all others interested in the future wellfare of our State, should turn their attention to this matter, and endeavor to remedy the evil already done, by encouraging a system of forest cultivation.

The demand for timber both for fuel and building purposes, is steadily on the increase; and to supply this demand, we are encroaching upon the patrimony of those who are to come after us. Considerations then, not only for our present wants, but for the future wealth and prosperity of the country should impel us to this work.

Forest trees do not diminish the fertility of the soil. This is proved by the great productiveness of lands newly cleared, and would be still further demonstrated, if the vegetable substances of the forests were united with the soil in a proper manner. Trees also have an influence upon the health of a community, as they absorb a large amount of the carbonic acid gas, which is being constantly manufactured by the machinery of animal life. They also absorb malarious poisons, due to the decomposition of vegetable materials. But by far their greatest benefit (at least to California,) is their power of condensing the clouds and vapors, and thus increase our annual rain fall.

Our Coast Range which at one time was clothed with the redwood, (*Sequoia sempervirens*) had a much larger rain fall than it at present receives. Since the trees were removed, the annual rain fall has been on the decline, until it is now only about one-half of what it was in former years. So it will be all over our State, if the same plan is persisted in. Hints like this, on the part of Nature, should be heeded, and a remedy, as far as is possible, be applied. Farmers (more particularly) should be taught to understand the great value of growing timber, and the influence it has upon their occupation and labors. They would then see the necessity of protecting it as much as possible from further wanton destruction, and also in addition, the value to be derived from setting out young trees, both of the evergreen and deciduous varieties. State legislation should be invoked in behalf of this interest, so that by a united effort upon the part of State and people, the area of timber cultivation might, by all available means, be enlarged.

The Bay District Horticultural Society of California have taken the first steps in this matter by submitting the following question, (among others) for discussion at an early date. "Which are the most suitable forest trees for California?" We feel sure, that the discussion will bring out many valuable suggestions, which we hope to see disseminated over the State.

We can leave no grander monuments for the veneration of future generations, than the o'er towering tops of mighty trees.

John Saul's Catalogue.—We have received an excellently arranged catalogue from John Saul, nurseryman of Washington, D. C., which comprises a superior list of new, rare and beautiful plants. We call the attention of our readers to his advertisement in another column

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

The sixth regular meeting of this society was held on Saturday, February 25th, at the rooms of the Academy of Sciences. The attendance was numerous.

After the transaction of the regular business, and the receiving of the reports of officers and committees, the following gentlemen were elected regular members. Gov. H. H. Haight; Henry S. Fitch, of Oakland; S. Simpson Brown, of San Francisco; Gustave Mahe, of San Francisco; Seven Vincent, of Alameda; John Hampton, of San Mateo; Ludwig Doeltz, of San Francisco; Wm. Robertson, of San Francisco; and John Rock, of San Jose.

Dr. C. C. Parry, and Hon. Horace Capron of Washington, were elected honorary members.

The subject of the proposed incorporation of the society, having come up, by resolution it was made a special order for the next regular meeting, when a majority of the regular members are expected to be present.

Mr. E. L. Reimer, decorated the table with two beautiful specimens of variegated leaf Geranium, which were raised by him from seed, and which were the general admiration of the members present. At the request of Mr. Reimer they were named by the society, and received for their appellations, "Gem of California," and "Reimeriana" respectively.

The importance of discussing subjects of general interest in relation to agriculture and horticulture at the meetings of the society having been duly canvassed, it was resolved that the society do now open and keep open a list of such subjects as may be proposed for discussion, and which shall be taken up by the society in consecutive order as they appear on the list.

The following subjects were then placed on file.

1. Which are the best varieties of roses, adapted to this climate for pot and open ground cultivation? Proposed by F. A. Miller.

2. Which are the best house plants? Proposed by Professor H. N. Bolander.

3. Which are the most suitable forest trees for California? Proposed by Professor H. N. Bolander.

4. Which are the best evergreen shade trees for California? Proposed by R. Turnbull.

5. Which is the best remedy for the destruction of the mealy bug? Proposed by R. Turnbull.

6. What is the best means of destroying those insects which at the present time infest cabbages and other similar vegetables to such an alarming extent? Proposed by M. Chiousse.

There are many more equally important and interesting subjects in horticulture and agriculture, which need proper agitation and discussion, and doubtless a great deal of good must emanate from such deliberations if carried on properly. But not only should the members of the Horticultural Society, but every one who is interested in horticulture and in the development of the resources of the country, should take an interest in this matter. They should communicate their knowledge and experience upon these points to the Society, and take an active part in assisting to canvass these matters thoroughly.

Letters and communications may be directed to or left at the office of the Secretary, F. A. Miller, No. 418 Kearny Street, San Francisco.

This is a good movement in the right direction and we do not doubt but that the Horticultural Society will soon fill a most important mission, that of enlightening the people of California on some of the most essential issues in the field of horticulture!

The March No. of the "Western Pomologist" is before us, and is full of interesting matter for the fruit grower, gardener and farmer. The subscription price is only $1 50 per year. If any of our California friends wish to subscribe for it, we will take pleasure in sending for copies. The magazine is pub- and edited by Mark Miller, Des Moines, Iowa.

NEW AND PROMISING VARIETIES OF VEGETABLES.

Trophy Tomato, is now considered the best and finest tomato in the East. The *National Farmer* says: They are almost as heavy as lead, and for beauty of color, perfect form and apparent hardness, surpass anything we have ever seen.

Egyptian Beet, was introduced into the United States about three years ago. It is the earliest turnip-rooted beet known. The flesh is fine and tender, flavor, sweet and excellent, and the deep rich color is well retained after boiling.—*Tliton's Journal.*

Laxton's William I. Pea, a splendid early variety and very promising.

A Big Pear.—At the rooms of the Massachusetts Horticultural Society, a pear was exhibited by Hon. Marshall P. Wilder, of the Uvedale's St. Germain variety, also called Pound Pear or Belle Angevine, which was grown in the orchard of A. P. Smith, Esq., Sacramento, California, and which weighed four pounds and nine ounces, measuring twenty-one inches around the stem and eye, and eighteen inches transversely.

Piedmont Sulphur Springs.—But very few of our readers probably are aware of the fact that we have some fine Sulphur Springs within one and one-quarter hours ride of San Francisco. About three miles back of Oakland, surrounded by magnificent Landscape Scenery are several Sulphur Springs, including some 360 acres of adjoining land, which have lately come into the possession of an enterprising company. A fine hotel nearly completed, highly improved Ornamental Grounds, (the most picturesque natural scenery remaining undisturbed,) a magnificient view over San Francisco, Oakland and the Bay, will make these Springs one of the most attractive places of resort during the Summer, and from present appearances we judge Piedmont is to become the fashionable "Watering Place" of this neighborhood.

NEW AND RARE PLANTS.

Cratægus Crus-Galli, (Cockspur Thorn) is one of the most beautiful of the Cratægus family, forming a conspicuous and striking object in autumn scenery, owing to the bright tints of its foliage at that season of the year, resembling the rich colors of the foliage of the Virginia Creeper. Let us imagine a tree 20 feet high, clothed with rich, beautiful autumnal colors, and mixed with large clusters of bright red berries, and we will be able to form a fair idea of its beauty.—*Gardeners' Weekly.*

Begonia Boliviensis.—A most remarkable species, with flowers of a rich vermilion red color, which are most freely produced. It is tuberous rooted, grows from two to three feet high, and its stems die down in the autumn, when they should be treated the same as *Gloxinias.*—*Gardeners' Monthly.*

Chrysanthemum frutescens.—A large white flowered greenhouse bush, sometimes called *Anthemis*; is a great favorite with the French people, and can be seen everywhere in spring with them, in windows, in halls, in flower beds, on restaurant tables, and its similitude in almost every young lady's bonnet. At the Paris Exhibition, plants were shown from four to five feet across, full of flowers.—*Florist and Pomologist.*

Benefits of Tree Planting.—It is said in arid Egypt, formerly desolate and sandy, irrigated alone with the overflowing waters of the Nile, there are now regular rains, owing to the forest trees planted by the government. A western writer begs our eastern papers to throw all their influence to help devise some plan by which our government can induce forest trees to be planted on the great plains beyond the Mississippi. Unless it is done, thousands of settlers must suffer both in crops and in their families for the lack of sufficient water.—*New York Horticulturist.*

(For us in California nothing seems to be of more importance than a general planting of forest trees. The Press should agitate the matter constantly until a systematical planting of trees is inaugurated.—*Ed.*)

The Ornithological and Piscatorial Acclimatizing Society.—A meeting of this Society was held March 15th, at the rooms of the Academy of Sciences, 622 Clay St. The attendance was large, and a great deal of interest manifested by those present. Mr. Green stated that Mr. Throckmorton had sent for 5,000 trout ova, which he proposes to donate to the Society. The eggs are to come from Massachusetts. The Secretary stated that they were using from 1200 to 1500 gallons of water per day, at the fish tanks, and also that it would be best to commence making arrangements for the removal of the fish. It was ordered that the Committee of Arrangements be empowered to select proper places, and report to the Society. The Committee were also requested to confer with Mr. Clayburne, (who is about to leave for Europe,) with regards to the importation of game birds, (Pheasant and Partridge.) After some discussion of the game laws of the State the Society adjourned.

The Society now numbers 140 members and is rapidly on the increase.

We call the particular attention of Nurserymen, Seedsmen, and Amateurs in Europe and the East to the advertisement in another column, referring to California bulbs, seeds, and plants. Mr. Miller has made and still is making arrangements for extensive collections on the Pacific Coast during the coming season; he will also exchange with foreign countries, and is ready to open negotiations for exchanges where it has not already been done.

We now offer great inducements to new subscribers to the "California Horticulturist," read our new advertisment in another column; go to work at once and send in your subscription, make up clubs and assist us in our efforts to develope the resources of the country, to create taste and comfort, and to better and improve the condition of our gardens, vineyards, orchards and farms. Horticulture and agriculture are the chief resources of our future welfare. Everybody admits this, but few are willing to take an active part. It is time that all our capitalists, landowners and business men generally should take this matter into serious consideration.

The New York Observer Year Book and Almanac.—We have received a copy of this valuable work from the publishers (Sidney E. Morse & Company, 37 Park Row, N. Y.) It contains an interesting history of almanacs; civil, commercial and agricultural information concerning all the governments in the world; a general summary of all the benevolent institutions and religious denominations in the world, with a complete Ministerial Directory of nearly every religious body in the United States; a complete list of all the colleges, theological seminaries, medical and law schools in the United States. In addition to the above it contains a reprint of the first Directory of the city of New York. Price one dollar. Mailed to any address postpaid on receipt of price.

All persons subscribing and paying for the New York Observer for one year ($3) will receive a copy of this valuable work gratuitously.

Preserve the Young Forest Trees.—W. G. B., in the *Prairie Farmer* says: In almost every part of our country it is the common practice to pasture the lot which contains the reservation of growing timber. Sheep, cattle and horses eat every young tree as it starts from the seed, so that in a few years when the old trees are gone, none will be growing to take their places. As a man raises lambs, calves and colts to perpetuate his live stock, so he or his children will find it necessary to preserve the young trees. Look out for the wood lot. If you have a farm destitute of growing timber, plant young trees and take good care of them. By so doing you will show a love for your country, and wise foresight for the coming generation.

[This has been the doctrine of this Journal for years, and we have been continually urging the planting of timber trees and ornamental trees, not only for mechanical purposes and for ornament, but for the *preservation of moisture* and for the general good.—*Ed. Calif. Farmer.*]

The *Farmer* is right. The planting and protecting of forest trees should form a much more prominent feature in this State, and we hope our next legislature will take the matter in hand.—Ed. California Horticulturist.

We have received the *Gardener's Monthly* for February, edited by Thos. Mehan, Brinckloe & Marot Publishers, 23 North Sixth St., Philadelphia. $2 00 a year.

The contents of this valuable Horticultural Magazine are:

Chromo Colored Plate of Bouvardia Vreelandii—Hints for Flower and Fruit Garden and Greenhouse — Communications;— A Flower Show in the Year 1830. By Mr. W. T. Harding, Phila.—Remarks on the Daphne Cneorum. By Mr. Antoine Winter, West Grove, Pa.—On the Raising of New Varieties of Potatoes from the Seed-ball. By Mr. Geo. Such, South Amboy, N. J.—Evergreens for Winter. By Walter Elder, Phila.—Discovery of Ancient Bones at Waukegan Ills. By Mr. R. Douglass —Well Ripened Tomatoes. B. L. B. Phila. —Bud Variations. By Mr. Charles Arnold, Paris, Ontario, Canada.—New Foreign Grapes By Mr. James Taplin, South Amboy, N. J.—Fungi and its Structure. By Mr. Josiah Hoopes, West Chester. Pa.—Editorials:—Travelling Recollections—Bouvardia Vreelandii—Hot-Water Boilers. With a large variety of news items both Foreign and Domestic.

American Pomological Society.—According to a letter received lately from Hon. Marshall P. Wilder, the 6th, 7th, and 8th of September next, have been fixed upon as the time for the next meeting of the American Pomological Society, at Richmond, Va. We hope to see California represented.

Catalogues Received.— Vick's Illustrated Catalogue and Floral Guide for 1871.

No. 3, (Hoopes Brother, & Thomas, Cherry Hill Nurseries, West Chester, Pa.,) Semi-Annual Trade List. Spring 1871.

Catalogue of new and beautiful plants, and French Hybrid Gladiolus for 1871. George Such, South Amboy, N. J.

Descriptive Catalogue (No 3) of plants. Ellwanger & Barry, Mount Hope Nurseries, Rochester N. Y.

Hovey & Co's., Illustrated Guide to the flower and vegetable garden for 1871, Boston, Mass. And, Kelsey's Catalogue of fruit, trees, plants, etc., Oakland, Cal.

The Horticulturist.—This journal, published at New York, and edited by Henry T. Williams, comes to us in a new and improved form. It is as usual filled with well written and useful matter pertaining to Horticulture, etc., and ranks as the first journal of its kind in the country. Price $2 50 per year.

Poultry for Profit.—There are few things more profitable than a well conducted chicken ranch, in this State. Eggs are high and will continue so; all kinds of poultry meat is also high and commands a ready market. A few acres of land with a few hundred dollars to prepare and stock it, is sure to pay well. But before a man wades deep into this business, he must be sure that he knows what he is about, and he must look close after his fowls, especially if he keeps them closely confined. A chicken is a delicate and complicated machine for turning cheap aliment into the most dainty food; but a hen can't lay eggs or raise chickens without proper care and food. Variety of food and cleanliness of coops are the essential requisites. No inexperienced person will be likely to succeed except from small beginnings. Such a man must build up his business gradually. A hundred hens are enough to start with, even when a large business is counted on in the future; and an acre of ground is wanted for their range. An acre should be added for each additional hundred. If only a single hundred was contemplated, a little less space might answer. The men are few who succeed in this business on a large scale; but when they do succeed they make a good thing of it. Even the lessons learned from the care of the first hundred, are often found to fail when applied to flocks of larger extent.—*Pacific Rural Press.*

Almond Culture.—We are informed that Colonel W. W. Hollister, has set out on his farm this season, fifty thousand almond trees, of the Languedoc variety. We hope to hear soon that all our farmers will follow his example and fill every nook with almond trees. There is more money in them than in gold mines.—*Santa Barbara Press.*

Editorial Gleanings.

THE TRADE IN SILKWORM EGGS.

A Washington correspondent of the New York *Journal of Commerce* furnishes the following information, showing the great extent and value of this new industry, which California is in a position to secure to herself:

The Minister of Italy, Commander Cerruti, in conversation this morning, impressed us with the importance of publishing widely in this country the fact of the continued spread throughout the countries of the Old World of a disease which threatens the destruction of the silkworm abroad, and the necessity which already exists for the importation of the eggs of this insect from the New World, where the disease has not made its appearance, and which may be for centuries free from its ravages. There are many places in this country where considerable plantations were made of the mulberry tree, of which no practical use has been derived in the way of producing silk on account of the high price of labor. Wherever these trees exist to the number of a few dozen, an unexpected source of profit now presents itself in the production of the eggs of the silkworm, which command readily $4 per ounce in specie. Two millions of ounces of these eggs can be disposed of annually under present circumstances, with the probability of a greatly increased demand. There is now a demand in Italy, France and all Europe, for such eggs as may be produced in inexhaustible quantities in this country with facility, and the subject is earnestly brought to the attention of our countrymen, who cannot manufacture silk fabrics to advantage, while they may produce the eggs with but little labor and trouble at a great profit. The best variety of the mulberry is the White Italian, *Morus alba*, which is a tree of remarkably easy cultivation. Should any persons who have a couple of dozen of these trees desire to test the advantages to be derived from the production of the eggs of the silkworm, but be wanting information as to the best process, we are quite certain that the Italian Minister resident at this capital will, on application, be most happy to supply the proper directions for the successful production of the eggs. Commander Cerruti will be happy to have any information where unemployed groves or plantations of *Morus alba* exist, and he will facilitate measures to render them productive to their owners. For some years France and Italy have been having recourse to Asia Minor, Persia, China, Japan, and other countries, but these resources failing, America must be looked to to supply the means of feeding the looms of Europe and the mouths of the silk producing population. The production of the tree and the egg in their greatest perfection in this country is no longer problematical, and now the opportunity presents of realizing the advantages which were some years since sought for, at so great loss of labor and capital. The white Italian mulberry tree is that which best supplies the product most sought for in Europe and which commands the highest price. The subject is worthy the attention of our nurserymen and rural population.

Pumpkins Among Corn.—A correspondent of the *N. E. Farmer* grows pumpkins as follows:

Procure seeds of a good quality, and from a different locality—for like all other vegetables, pumpkins need a change of locality—then after having planted the field of corn, go over it with the pumpkin seeds and put one or two seeds in one hill out of each four; and, near the border or edge of the field, in every other hill. Those on the outer rows, by running out where they will receive more sun and air, will do the best, and may be planted more thickly. Not only in the corn field, but also in the "potato patch," can good pumpkins be raised by planting them near the edge or in the outside row, or anywhere in the field, by giving to each vine the space allowed to a potato hill. They must be looked to occasionally and the bugs destroyed; remembering to nip the ends of the vines after well "set."

EFFECTS OF SALT AS A MANURE.

It supplies soda and chlorine to growing plants. By moisture, keeping the soil moist, and so assisting plants to assimilate their food contained in the earth, especially during a continuance of dry weather. It exercises a great influence in rendering soluble some of the more insoluble earthy salts of the soil. When mixed with farm-yard manure sown on soils already dressed with dung, it seems by its penetrative and assimilate power to cause many of the salts in the manure to be sooner developed into a state fit for plant food than would be the case if left to the action only of the slower process of natural decomposition.

When added to the manure heap in the barn-yard and thoroughly mixed into it at the rate of about two tons of salt to thirty tons of manure, it kills the seeds of weeds, eggs and larvæ of insects, and greatly promotes the fermentation and decomposition of the whole mass, while at the same time it does not, like lime, set free the ammonia or volatile salts in the manure. When added to lime a double decomposition takes place, resulting in the production of soda and carbonic acid, both of which possess greater fertilizing properties than either salt or lime. Combined with gypsum, salt produces soda and sulphuric acid, at a cheaper rate than can be obtained in any other way.

As a general thing there are few fertilizing materials used on the farm that cannot advantageously have salt added to them.

To Destroy Thistles.—The Canada *Farmer* says: "Let the thistles grow up as thick and as high as they will, until they are just in full flower; then, if they are too thick for the horse to walk through, as is often the case, they are mowed and the land is thoroughly plowed. The cut thistles, which are almost as good as a green crop, are plowed in and the ground well cultivated. The thistles have made their growth to the utmost, and the roots are in the weakest and most expended state, and two plowings, with cultivating, will then make clean work."

Preservation of Apples.—The London *Gardeners' Chronicle* says: "I cover the floor of my cellar with hurdles, two in thickness, and on this I put a little straw, upon which the apples are placed without further care or attention, except removing all that appear to be faulty as I place them in the cellar, and I think it is unnecessary to use any particular care in this respect. I have at present one hundred and ten bushels of apples thus heaped up in a small cellar; two or three times a week I give a good wetting with fresh water, as much as I think will wet the whole of them. This water drains off through the straw and hurdles into a well. In this way my apples keep well until the time I usually dispose of them; the best to make me a good return after Christmas.

"At present, the apples look as firm as if just gathered, and I understand that during the last ten years, they have always kept as well and fresh as now. How much less troublesome and easy of application for keeping large quantities of fruit, than storing them away in dry sand on shelves, or in boxes, or in any other of the ways that are highly recommended."

Special Manures for Potatoes.—Dr. Augustus Vœlker, of England, during the last year, has reached valuable conclusions as to the application of manure to potatoes. He sums them up in the *Journal* of the Royal Agricultural Society.

1. The greatest increase came from the application to an acre of 400 pounds of mineral superphosphates, 200 of potash salts, and 200 of sulphate of ammonia.

2. Dung did about as well.

3. The absence of sulphate of ammonia was attended with a marked falling off, and nitrate of soda cannot replace it.

4. The compound above named beats Peruvian guano.

5. Common salt does no good, but harm to potatoes.

6. The above mixture gave a crop of twelve tons to the acre on light land, and the same unmanured yielded but half.

Bouvardia Davisonii.—We have before noticed this beautiful plant in our magazine. It was obtained by Mr. Davison from B. Hogarth. As we understand, it was a branch of Hogarth which produced a white flower, and not a seedling, which has some interest in connection with the cases of Trillium and Wistaria recently noticed. It is a remarkable fact that plants with variegated leaves which originate as sports from green leaved ones, will not come true when raised from root cuttings. A root cutting of a variegated plant as far as we know, produces but green leaved plants. It was supposed by some good florists, that on the same principle root cuttings of this Bouvardia might produce the original Hogarth. This would be against its value, as there is no way to raise Bouvardias rapidly except by roots. But we are pleased to say we have now before us a specimen raised from a root which has the white flowers, so this question is settled. The Bouvardias are amongst the most valuable of our winter flowering plants. A good white will be particularly so. Mr. Davison we think has met with a little fortune in his lucky accident.—*Gardeners' Monthly.*

Castor Beans.—A Los Angeles paper says: The raising of castor beans is attracting something of attention hereabouts. Several who last season cultivated a few acres have met with results that have been eminently satisfactory. In this section the crop must undoubtedly prove a profitable one. The plant will thrive upon soils that are too dry for many other products, and the cost of cultivation is said to be less than the same number of acres in corn. A ready market at remunerative rates is always open.

Remedy for Smut in Wheat.—At a late meeting of the New York Farmer's Club, Mr. Newbold said that as far back as forty or fifty years ago, smut prevailed to a great extent throughout Burlington county, New Jersey, and his father adopted the plan of soaking selected seed wheat in brine, and then dusting it with air slacked lime. This proved then, and has proved ever since, a perfect preventive, without a solitary exception.

What Cloves are.—Cloves are the unopened flowers of a small evergreen tree that resembles in appearance the laurel or the bay. It is a native of the Molucca or Spice Islands, but has been carried to all the warmer parts of the world, and is now cultivated in the tropical parts of America. The flowers are small in size, and grow in large numbers in clusters to the very ends of the branches. The cloves we use, are the flowers gathered before they are opened and whilst they are green. After being gathered they are smoked by a wood fire, and then dried in the sun. Each clove consists of two parts, a round head which is the four petals, or leaves of the flower rolled up, enclosing a number of small stalks, or filaments; the other part of the clove is terminated with four points, and is in fact, the flower cup and the unripe seed vessel. All these parts may be distinctly seen if a few cloves are wet for a short time in hot water, when the leaves of the flower soften and readily unroll. Both the taste and smell of cloves depend on the quantity of oil they contain. Sometimes the oil is separated from the cloves before they are sold, and the odor and taste in consequence much weakened by such unfair proceedings.

CENTRAL PACIFIC RAILROAD.

Passenger Sunday excepted.	Express. Train Daily.	February 27, 1871.	Express Train Daily.	Passenger Sundays excepted.	
4.00 P M	8.00 A M	San Francisco	5.45 P M	12.30 P M	
4.42 "	8.40 "	Oakland	5.12 "	11.58 "	
	7.30 "	San Jose	5.40 "		
7.58 "	12.10 P M	Stockton	1.46 "	8.35 "	
9.35 P M	2.10 "	Sacramento	11.15 A M	7.00 A M	
	4.10 "	Marysville	9.10 "		
	9.00 "	Sesma	4.20 A		
	2.20 "	Sacramento	11.45 "		
	5.25 "	Colfax	8.45 "		
	1.15 A M	Reno	1.00 A M		
	9.10 "	Winnemucca	4.05 "		
	12.00 M	Battle Mountain	1.25 P M		
	4.10 "	Elko	8.45 A M		
	6.10 "	Ogden	5.15 PM		

EASTWARD. WESTWARD.

OAKLAND BRANCH.—Leave San Francisco, B 6 50, 8 00, 9 10, D 10 20 and D 11 10, a. m. 12 00, 1 50, D 3 00, 4 00, 5 15, 6 45 and B 11 30 p. m.

Lv, Brooklyn, B 5 15, B 6 30, 7 40, 8 50 and 10 00 a. m., 1-30, 2 40, 4 55 and 6 25 p. m.

Lv. Oakland, B 5 25, B 6 40, 7 50, 9 00, 10 10, 11 00 and 11-50 a. m., 1 40, 2 50, 3 50, 5 05 and 6 35 p. m.

ALAMEDA BRANCH.—Leave San Francisco, B 7-20, E 9 00, BC 9 30 and EC 11 30 a. m., 1 30, 4 00 and 5 30 p. m.

Lv. Haywards, B 4 15, B 7 00, E 8 30, B 9 00 and E 11 00 a. m., and 3 25 p. m.

Lv. Alameda, B 5 15, B 7 36, E 9 06, B 9 36 and E 11 36 a. m., 1 35 and 4 05 p. m.

B Sundays excepted. E Sundays only.
D to Oakland only. C To Fruit Vale only.

T. H. GOODMAN, General Passenger and Ticket Agt.
A. N. TOWNE, Gen'l Supt.

THE

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THE FUCHSIA.

The Fuchsia derives its name from the German botanist, "Fuchs." The first plant (*Fuchsia triphylla*) was introduced into Europe by Plumier, who took it there from America in the seventeenth century. It is usually found growing on hills throughout the forests of Mexico, Peru and Chili.

Along the Coast Range of California the Fuchsia can be cultivated to perfection; it thrives best in moist and partly shaded localities.

In San Francisco and its vicinity, the Fuchsia seems to be at home, and no plant is cultivated here with greater success both out of doors as well as under glass. In summer and in winter it continues to develop its bright little "ear-drops" (as some people call them) and it is remarkable that the same degree of cold which we had here last winter, would have killed those plants if exposed to the open air in New York or Boston, but had not the slightest effect on our plants; in fact, in many localities they continued to bloom as freely as in May. Under such circumstances, should not the Fuchsia be one of our greatest favorites?

Very often we are asked, can I raise Fuchsias from slips in the open ground? Our answer is, we have met parties frequently who have stuck slips of year-old wood of the Fuchsia into the ground; they have grown and within a few months have made flourishing plants; and this has been done both in summer and in winter with equal success.

This fact goes far to prove how well our climate is adapted to the cultivation of the Fuchsia.

However, no florist or nurseryman would attempt to raise Fuchsias in that way. The florist takes the young shoots of the present year's growth, plants them close together in pots or shallow boxes filled with sand, waters them well after planting so as to settle the sand close around the stem, and places the box close under the glass, shading them for a few days, and in a month or six weeks roots are formed; the young plants are then transplanted singly into two or three-inch pots, placed again under glass, and shaded for a few days. As soon as the ball of earth is covered with the young roots, the plants must be shifted into four-inch pots; afterwards from four-inch to five-inch, and so on. The grand secret to ensure perfect success is to keep the plants in a constantly growing condition; as long as you keep the plant growing, you will have a profusion of flowers. It is true that Fuchsias will flower more freely with us in the open air than in pots under glass, but this is only the case when the soil in the pot is not sufficient to keep the plant in a growing condition. Taking into consideration how easily young plants are raised, we do not see why every one who is fond of Fuchsias should not raise

every year young plants from the old ones, and in this way keep a certain number of plants always in readiness to replace the old ones, which should be turned into the flower garden or thrown away.

Some Fuchsias are well adapted for training, while others make handsomely shaped bushes and trees. We have seen them covering the side of a house twenty feet high, and certainly the effect was charming.

The varieties are too numerous to mention, and all of them are good. Every year adds a large number to the already copious list; these are sold in Europe and in the East at extravagant prices. Latterly the florists have succeeded in producing double flowering Fuchsias, and these are in more demand and at much better prices; one of the best and most popular with us is the double white.

At an early day we shall endeavor to give the names and descriptions of the best varieties now in cultivation here.

THE LILY.

We promised to continue from time to time, the description and hints for the treatment of bulbous roots, and we offer the following remarks in compliance.

Although Hyacinths and Tulips are at the present time the most popular of flowering bulbs with us as well as in the East, yet there are many other varieties of bulbous roots which are equally desirable. We propose in this article to speak of another most important class, the Lilies, these have attracted a little more attention since the Japanese lilies have been brought in large quantities into our market, and have proved a success. Of all the Japanese lilies, (and there are a goodly number of them,) the *Lilium auratum* has no superior; fine plants in pots have been sold frequently at four and five dollars each when in flower, while good bulbs can at the present time be bought at 15 to 20 cents apiece, and are certainly within the reach of any one who appreciates flowers. There are also many other varieties which deserve extensive cultivation: We know a gentleman in New York who cultivates over 100 varieties. Some of them are very fragrant and of very powerful perfume, while others are even injurious to health, if a group of them is placed in the bedroom or parlor; others are not fragrant although beautiful in form and color.

The cultivation of the lily is very simple, it requires a deep soil enriched with very old rotten manure. The bulbs should be planted from six to eight inches deep, and should not be removed more frequently than every three or four years. The most of the lilies improve if allowed to remain in the ground for a number of years. Unlike hyacinths or tulips the roots should not be kept out of ground for any length of time, and if they are not replanted immediately, they should be covered up with dry soil so as to exclude the air as much as possible. They can be cultivated successfully in pots, deep pots being preferable. The lilies are propagated by seeds, offsets, and also by scales of the old roots, which will form themselves slowly into bulbs.

We have in California five or six distinct and very superior native lilies, which when properly cultivated, will doubtless rank among the very best at present in cultivation. In fact, our large native white lily, *Lilium Washingtonii*, which is indigenous in the higher range of the Sierra Nevadas, is considered superior to any of the known lilies in size, form and fragrance, yet no one attempts to cultivate them. We are inclined to believe, that by proper treatment, we shall be able to exhibit them equally as good as they are in their native localities, where we have seen them six to eight feet in height, with from twelve to fifteen large and well-developed flowers. We shall at an early day give a description of our native lilies, and if possible, give a correct representation of the flowers.

Of the Japanese lilies of more recent introduction there are several varieties, the best of which is the above named *Lilium auratum*, (golden lily,) the flower of which is from eight to ten inches in diameter, and consists of six white petals, marked with chocolate crimson

spots, and a golden band through the centre of each petal, the flower is most exquisite for sweetness of perfume and of color.

Next comes the *Lilium lancifolium*, (Lil. speciosum), of which there are several varieties, viz: *Rubrum*, white with crimson spots; *Album* pure white and very fragrant, and *Roseum*, rose spotted.

Lilium candidum, is an old variety of a pure white, very fragrant and it deserves extensive cultivation.

Lilium tigrinum, (Tiger lily) is a native of China. The flowers are of an orange color with black spots, somewhat resembling our California so-called Tiger lily, but differing in many essential points; the foliage of the latter standing in whorls around the stem and producing much larger flowers. The *Lilium tigrinum* produces small bulbs in the axils of the leaves, which if placed in the ground will form new plants.

Lilium superbum, is a native of the New England States. It deserves extensive cultivation and is also entirely different from the so-called *Lilium superbum* of the Pacific Coast.

Lilium chalcedonicum, is a beautiful scarlet lily with reflexed petals. It is a very popular old lily; several varieties of it exist.

Lilium longifolium, is a fragrant white lily of great beauty; its flowers are rather long, and it comes into bloom in July.

Lilium Canadense, is also a native of the Eastern States. Its flowers are of an orange color with brown spots, and it is much improved by cultivation.

We have now enumerated the best and most popular varieties of lilies, and if we add the five or six varieties growing wild on the Pacific Coast, the collection will serve all purposes in our gardens.

CRANBERRIES.—The cranberry plant is a beautiful evergreen, and grows thriftily; it can be kept all winter, and may be so trained to grow from flower-pots as to be beautifully ornamental to the parlor and dining-room through all seasons of the year. They will grow in any ordinary room, without special attention, and the berry will remain on the stem until the flowering for another crop. It flourishes farther north than any other berry ripening on Bushman Island, on the Western slope of Greenland, in latitude seventy-six.

FUNGI AND ITS STRUCTURE.

BY JOSIAH HOOPES.

From an Essay read before the Penna. Fruit Growers' Society.

(CONCLUDED FROM LAST NUMBER HORTICULTURIST.)

In passing to the Apple and Pear, (for the species of Fungi, that attack them, are almost one and the same,) I desire first to call your attention to the very dangerous disease, popularly known as the *fire-blight*. Our observing Secretary, in a paper read before the American Pomological Society, at its eleventh session, minutely described this malady in all its stages; and in fact, was the first to take decisive ground in favor of the fungoid theory. Subsequent research has fully proven to my mind, how true was his reasoning. Certain requirements are undoubtedly necessary—or rather the little parasitic plant greatly prefers some particular condition in the growth of a tree to locate, for we find it destroying some varieties, to the total exclusion of others. In large blocks of Nursery trees, it will frequently follow a particular row its whole length and studiously avoid all others in the near vicinity. Thus we see, as in all other species of fungus, the form under notice, acts in precisely the same manner. Early in the season, this microscopic pest commences its operations, and at the point where it first makes its appearance, a slight discolorization will be apparent, which, rapidly working its way round the tree, in fact completely girdles it, and produces strangulation. As the bark darkens and dies, we need not then examine the locality, for the criminal has performed its mission and departed. Those who suppose the withering leaves and shriveling tender twigs embrace the diseased portion, are wonderfully mistaken. All the functions of the branch above the girdled parts will be found uncontaminated. This particular parasite propagates itself in the following simple manner, according to my observation. The spores falling upon the bark, soon change into little thread-like rootlets (if I may be allowed the term.) These soon work their way into the openings of the epi-

dermis, or outside skin of the tree, winding down through the cellular fibre of the bark, and here in the form of mycelium, grow directly on the wood. Occasionally, however, they penetrate the wood-cells, and in that case the disease is always, and quickly fatal. Berkeley asserts, in corroboration of this fact, that "the wonderful power of penetration possessed by Mycelium, may be easily seen in any dark-colored Fungus, by making thin vertical sections through the wood. Not only do the threads penetrate between the cells, but into their cavities themselves, at length completely blocking up their apertures, after traversing them in every direction." But while the little pest is rapidly spreading by means of its root-like formation, it is also developing large numbers of little capsules with their millions of spores, to reproduce its species in other spots. So that the sooner the branch is eradicated and burned, the better it will be for neighboring trees.

A few weeks since, I had an opportunity of examining a twig from a pear tree, which was thickly marked with indentations, closely resembling the result of insect depredations. Under the lens, it showed an occasional remnant of Mycelium; but the plant itself had perfected its growth, burst through the skin of the bark, and disappeared, thus causing the disfigurement mentioned above. As it appears to be an entirely new form, or at least it works on a new method, I should like to obtain fresh specimens at an earlier season. Meehan, in the paper referred to, in speaking of leaf-blight, alludes to the theory of its under-ground introduction. In this I think he is entirely correct. English Mycologists have asserted, that many species of Fungi, that appear in their perfect state on the external portion of plants, have first intruded themselves into the roots,—up through the body,—out of the branch,—and become apparent on the leaves; there to flourish, throw out their spores, and perish; leaving always behind them, a devastating mark, after they have passed away. Such I firmly believe to be the nature and habits of the leaf-blight fungus, as in nearly every instance the Mycelium will be found on the roots of such diseased trees or plants. Growers of Pear Seedlings should note this fact, and apply some powerful remedy to the soil, and thus destroy the seeds of growth. Canker and cracking of the fruit, have each been attributed by the aforesaid writer to the presence of fungus, and justly so, according to my own observations during the past year.

The disgusting sooty patches on the skin of the apple becomes, under the microscope, one of the most enchanting sights—resplendent with all the rainbow tints. At one point, we see a rich golden-yellow; then, merging into a brilliant orange, or a charming shade of red, —the whole, forcibly reminding one of a bright mass of Fungi, consisting of thousands of dots and fibres, radiating in every direction from the outer edge, whilst in the interior, the dense bulk becomes confluent. To the naked eye this immense multitude of miniature plants covered a space no larger than a medium-sized pea. We frequently hear complaints of the Apple, Pear, etc., rotting on the trees. This is not unfrequently the work of an *Oidium*, allied to the origin of the Grape disease of Europe. It commences with a small dot or speck on the skin of the fruit, and as the Mycelium rapidly increases, the decaying portion soon marks its course, until at last the whole fruit is in a manner diseased, and rendered worthless. The terrible pest of the silk growers, that occasionally sweeps off their worms by thousands, is also closely related to the *Oidium*, and can be transferred artificially from one insect to another, thus proving its true character. My own views relative to the disease in the Peach, known as the "Yellows," are, I admit, purely speculative at present, but at the same time founded on personal examination and comparison with not unsimilar affections in other trees. For some years past I have carefully considered the many theories advanced in regard to this mysterious malady, but all proved unsatisfactory to my own experiments. The idea occurred, can it possibly originate from the presence of Fungi? I im-

mediately commenced a series of critical observations on the organic structure of the wood of such unhealthy trees, and although I detected very many suspicious traces of these minute pests, I candidly admit that my labor was not rewarded with success. The *Yellows*, to my mind, present every feature of an organic disease, caused by some poisonous species of cryptogamic plant; as we find like traces of their existence, commencing in the roots, up through the main body of the tree, working their way out of the various branches, and finally ending their career externally on the leaves and tender twigs of the present season's growth. During the life of the fungus, it makes scarcely a perceptible sign to the unaided eye of the observer, but after its functions have been performed, and the plant itself has ceased to exist, then the change in its victim becomes apparent. The dissection of various portions of the tree, plainly shows that a poisonous virus has penetrated into every part, of its organization. This theory is sustained by many facts; as for instance, orchardists are well aware that a knife used in dissecting one of these diseased trees, will communicate the *Yellows* to a healthy one, by the simple act of pruning. This is an undisputed fact, and is an excellent argument in favor of the transfer of mycelium from one point to another. I feel confident that future and careful investigation, will confirm all that I have advanced in this direction. Some varieties of the *Peach* and its curious sport the *Nectarine*, are liable to mildew; in a few instances, injuring the tree alone, but occasionally destroying the fruit, whilst ignoring the limbs and foliage. This form of fungus is exceedingly partial to particular organizations, and will not spread from its chosen variety to another, whether near or distant therefrom.

The *knot* on *Plums* and *Cherries* is so evidently caused by the presence of Fungi, that it seems scarcely necessary to refer to it at all. But only so late as the past summer, I read in one of our Agricultural magazines, an article by a correspondent, arguing strenuously that the excresences were caused by insects; "for had he not seen them in all their various stages disorganizing the cells of the Plum and Cherry?" It is merely necessary to say that the insects in question select these soft spongy excresences to deposit their eggs, as they would the young fruit, and if the writer of the article in question had commenced his observations sufficiently early in the season, he could readily have satisfied himself that another enemy was already at work. Our worthy honorary member, Dr. Ezra Michener, a cryptogamic botanist of high standing, emphatically asserts in the columns of the "Medical and Surgical Reporter," that this disease is caused in the manner which I have stated. The spotting of the leaf in Plums and Cherries, is caused by a similar species of Fungi to that found on the Apple and Pear, only differing in a few unimportant points, of no particular interest to the fruit-grower.

On the smaller fruits, we have numerous annoying diseases, classed under the general heading of *mildew;* as for instance, the foreign varieties of Gooseberries, are often completely disfigured, by a fine, meal-like dust or web-like growth, covering every portion of the plant and fruit, and rendering the latter entirely useless. Then again we find the leaves of Currants spotting badly, and Raspberry leaves shriveling and falling off prematurely. A very pernicious species of fungus has occasionally been found on Raspberry leaves, cup-like in character, and of a beautiful orange color. I judge it belongs to a class of parasitic plants, which ascend from the roots, up through the whole structure of the canes; as we have ample evidence in the numerous weakened shoots usually forced into growth, as the result of its presence. I am informed, however, that it rarely occurs on properly drained soils. On Blackberries, both *high-bush* and *trailing*, in a wild state, I have frequently noticed this pest; but never in cultivation in the eastern portion of our State. I understand in some sections in New Jersey, it is presenting rather a formidable appearance, and increasing rapidly. I should feel obliged for specimens next year, and will gladly give any

information in regard to it, that I may possibly discover.

REMEDIES.

There are various receipts for destroying these pests; but the most certain and least expensive, is to cut away and burn all diseased portions of the tree or plant, as soon as the malady is detected. Sulphur is perhaps the most powerful remedy for destroying them, but heat is absolutely essential, as in a volatile state, it will penetrate into the most difficult places. A writer in the *Gardeners' Chronicle* says: "The crude sulphur, it should seem, combines with oxygen in a nascent state, and so forms sulphurous acid, which is eminently destructive to mucedinous bodies, as appears from its effect in stopping fermentation. The more finely the sulphur is divided the better, and therefore it is more efficacious when applied in such a form, as to cause a chemical deposit of sulphur, or, as it is called in the old chemistry, a *magisterium* on the leaves." Lime, air-slacked to a powder, is likewise a valuable destructive power, either applied to the diseased spots, or incorporated with the soil. A combination of the above two agents, is occasionally used, and regarded by some, as more serviceable than either separately, for in solution, it forms a hydro-sulphate of lime.

English writers say that a successful agent in destroying smut on wheat, is a strong solution of *Glauber's Salts* applied to the seed, to be followed by a dusting with quick-lime, a short time before planting. Caustic Soda is also beneficial in ridding us of some species; and Carbolic Acid has proven useful as well. According to Berkeley, "substances which would prove fatal to many other vegetables, as solution of arsenic, opium and many other poisonous chemical substances, do not prevent the growth of moulds."

USES OF FUNGUS.

Before leaving this subject, I wish to add a few words in favor of this class of vegetation. In addition to the many nutritious esculent species which are valued as articles of food, Fungi have another useful office to perform and may be classed among the most beneficial scavengers of decomposing bodies. The moment vitality ceases in any organized matter, whether animal or vegetable, millions of spores floating in the air, are ready to alight upon it, and assist in its dissolution. Whether Fungi is the cause of disease, or merely natural consequence of some disarrangement of the organs of a tree or plant, has long been a much disputed point; many scientific gentlemen being arrayed on either side. Of late years, however, the question appears to have been pretty generally settled in favor of the advocates of the former belief. Yet it is an undisputed fact, that these pests will attack a feeble tree or plant, in preference to one in a healthy condition, after the manner of all parasites, whether animal or vegetable.—*Gardeners' Monthly.*

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION VI.

In our former numbers, we have offered suggestions as to soil; preliminary work; selection of plants, and their disposition in a garden attached to a city residence, but we have as yet said little about the laying out of walks in such garden. The grounds being too limited to admit of much choice, local circumstances must necessarily govern their extent and direction. We protest however against the construction of narrow walks, and we are very much opposed to cutting up the ground with too many of them, as they entirely spoil the desired effect, besides good walks are expensive to construct, and entail as much expense to keep clean and in good condition as the beds themselves.

It is difficult to give the exact width which walks should have, but an average of 3 feet will suffice for most of the gardens of city residences, but more importance than is customary should be attached to the construction, and to the material which is used.

The walks should be staked and marked out before the soil for the beds is prepared and before the planting takes place, but the finishing of them should be made the last work in the

laying out of a garden, they should be kept a little higher in the centre than at the edges; this will give a more pleasing effect than when they are constructed entirely level, and will also during wet weather keep the centre dry and in condition to be used with comfort.

In reference to material, there is a great difference of opinion, but this exists only among owners and occupants, and not among gardeners. Some prefer bricks for walks, others prefer wood, while some are satisfied with the natural soil with a wooden border. The most objectionable material for walks is wood, as it gives a stiff and unnatural appearance; brick walks are also objectionable, not so much on account of their appearance, as the difficulty of keeping them in good condition, while those consisting of the natural soil appear unfinished, and lack that effect of contrast so desirable in a house garden.

The best material for walks is a layer of about six inches of hard rock of moderate size as a foundation, with an upper layer of three to four inches of soft rock, this should be pounded down well, carefully preserving the cross-curvature, and keeping the surface completely smooth and even, finally adding a covering of an inch of fine gravel; crushed shells will answer if the gravel is difficult to obtain. We have also seen very good walks made of soft blue stone, which packs well and gives a good finish without any other top-covering. In Oakland we have seen a kind of soft red slate used for the top-dressing of walks, this is crushed at the mills for that purpose. In every locality some material suitable for walks, can be obtained at a moderate outlay not exceeding the cost of lumber or bricks, and certainly much more desirable; but fine gravel if it can be obtained at a reasonable expense, is the neatest and best material for a top-dressing.

The walks being completed, we next urge the necessity for procuring suitable stakes for the plants; these if possible should be uniform in size for certain plants. Trees should be provided with stakes large enough to allow for two or three years growth; flowering shrubs should be suited with them according to their average size. Roses may be supplied with five foot stakes, and geraniums, fuchsias, etc., with four-foot ones; pinks should have wire or wooden frames.

We are also in favor of labelling plants correctly; labels certainly are instructive, make us familiar with the names of plants, and give a certain finish to the garden; they may be made out of wood, zinc, or tin, and should be painted white, the names can be written on them with black lead pencil.

POPULAR BOTANY.

CHAPTER VI.

Having given in a former chapter the construction of an exogenous stem, it will now be necessary to give a glance at the development of an endogenous growth before we pass to the minute consideration of vegetable structure. Plants of this form of growth are principally confined to tropical countries, though a few do overstep the boundary lines, and are to be found in the temperate zones, or rather those portions of them which are better styled sub-tropical.

The trunks of endogenous trees are unbranched, except at, or near their summits, and rise in cylindrical columns to the height of from 30 to 150 feet. The internal structure of the stem differs from an exogenous one, in having no clear distinction into bark, pith or wood, while the wood is destitute of concentric rings, or layers, and contains no medullary rays. In construction it is made up of woody and vascular tissues, arranged in bundles or fibres, which are imbedded in an irregular manner in the cellular tissues, the whole being inclosed in an integument, which, although acting as a bark, is still widely different from the true bark of an exogenous tree; for it is not increased by layers, neither is at any time separable from the wood.

The fibrous bundles which constitute the wood of the stem, can be traced from the base of the leaves through the stem, often to the roots themselves. In most cases they turn aside and we find the terminal end imbedded in the integument.

The stem is increased by new bundles arising from the base of newly developed leaves, and passing thence towards the centre of the stem descend to a greater or less distance, curve outwards and end in the integument as before said. The bundles which are added to the stem from year to year, do not arrange themselves on the outer surface of the previously deposited ones; but actually push themselves into the centre of the stem, and so force the older bundles outwards. Hence this form of growth is called *inside growers*, while the exogens which deposit their wood in layers or rings, one without the other, are termed *outside growers.*

The stem of an endogenous plant has its softest wood at the centre, and the hardest and most compacted at the circumference, this being the reverse of the exogens. The stem continues to increase in size by this system of distention, so long as the integument is capable of yielding, but as this property fails, the multitude of descending bundles at last block up the lower part of the stem, and so it is at once seen that plants of this kind must have a limited life. This rule does not, however, hold in all cases, as there are plants of this class, whose integument is capable of an unlimited distention.

Palms, which we will take as the typical plant of this class, (endogenous) grow as a general thing from one terminal bud, and if this bud is destroyed the plant dies. This mode of development accounts for most of the endogenous trees rising up in such perfect columns, and bearing their branches all at the top. While we can claim this as a main characteristic of the endogenous class, still even in this there are exceptions, as in the case of a certain palm of Egypt, and also the *Pandanus* (screw-pine) which do develope lateral buds, and so bear branches other than at their summits.

In this, and previous chapters, we have endeavored to show the formation and arrangement of the wood in the different stems. We shall now proceed to give a few thoughts to the origin of wood, which is as yet something of a disputed point. We consider that the wood of a stem originates in the leaves, and grows from above, downwards. Prof. Gray says: "the following considerations may be adduced to show that the *wood* is deposited or produced *from above, downwards.* 1. When a ligature is closely bound around a growing endogenous stem, the part above the ligature swells; that below does not. On examination, the woody fibres are found to be arrested at the upper margin of the ligature, and thrown into curved and knotted forms; or, where the ligature is spiral, the descending fibres follow the course of the obstruction. 2. When we girdle an exogenous stem, by removing a ring of bark so as completely to expose the surface of the wood, the part above the ring enlarges in the same manner; that below does not, except by the granulation of cellular tissue, until the incision is healed.

From these two facts if there were no other we might assume the correctness of our premise, but there are others which are also conclusive. Wood is not produced in a seedling until the leaves are developed. In our next chapter we shall take up the leaves, showing their relation to the stem, and adduce further proof of the downward growth of the wood fibres.

HENS.—Some interesting experiments have recently been made upon the comparative fecundity of ducks and hens, so as to determine from which of the two the larger number of eggs can be obtained in the same time. For this purpose three hens and three ducks were selected, all hatched in February, and nourished with suitable food. In the following autumn the ducks laid 225 eggs, while the hens laid none. In the next February the laying season began again with ducks and continued uninterruptedly until August. They showed no inclination to set, but became very thin, although they afterwards fattened up somewhat. The total number of eggs laid by the hens amounted to 257, or 86 eggs each; and 392, or 191 each for the ducks. Although the eggs of the ducks were smaller than those of the hens, yet they proved to be decidedly superior in nutritive material, so that the superiority in productiveness appears to be decidedly with the ducks.

CALIFORNIA VINICULTURE.

We have read with a great deal of interest, several letters published lately in the *Alta California* relating to the cultivation and management of Grape vines. The public discussion of these matters is an excellent movement, and we hope to see more of it.

The correspondent of the *Alta*, Mr. Keller of Los Angeles, is evidently well posted both in the treatment of Grape-vines and the making of wine. So far as our opportunities have offered, we have argued from year to year, in favor of the more extensive planting of foreign grape vines, and if, as Mr. Keller says, "many of our viniculturists attach more importance to quality of soil than to the varieties of the Grape vines they cultivate," it is simply a mistake on their part, and they must be losers in the end; can it really be the case that some of our viniculturists prefer the planting of Mission Grapes because they yield larger crops? Can it be that they still follow our old California maxim, to look for quantity in preference to quality? We are inclined to believe that our cultivators are not keeping pace with the consumers, who are beginning to look more for quality than quantity. This we can easily prove by the fact that a few of our prominent growers of foreign wine grapes are able to turn their produce into money at any time they desire, and that they are readily obtaining prices which leave to them a very handsome profit, while the majority of those who cultivate the Mission Grape exclusively, are compelled to sell their products at any price.

The great bulk of the wine which we require for our own consumers, is a light wine, which, as Mr. Keller says, *cannot* be made out of the Mission Grape, while the success of the cultivator must always depend on his knowledge and capability to suit the wants of the consumers.

Little judgment has been hitherto exercised in the selection of land for the growth of Grape vines; low flats have been used for that purpose on account of the richness of the soil, easiness of access, and abundant moisture; we have no faith in such localities for Grape vines. Experience has proved that hillsides always have been, and always will be preferable, and this is a point which is universally conceded. But will Grape vines grow on the hillsides without facilities for irrigation? We have every reason to believe so, and we offer the following advice for due consideration. Take good well rooted plants, one or two years old, and otherwise in good condition, plough your ground deeply, plant early, plough again in the following spring, keep the ground clear from weeds, and if circumstances are very unfavorable, mulch with a small quantity of straw or litter of some kind, and you will not lose many of your vines, and there will be no trouble after the first year. Do not plant any more than you can properly attend to.

In connection with this subject, we will mention a peculiarity which came under our own observation more than once. In testing different varieties of foreign grapes, we found the flavor of those grown in the northern foothills to be much more distinct, than of the same varieties grown in the Sacramento and Sonoma Valleys. Can any one explain this?

HOME-MADE YEAST.—The following is the most superior receipt for yeast I ever saw, and I have tried dozens, for we always use hop rising. It is available to country people, as it requires no yeast to commence with. Try it and you will never use any other: Boil two ounces of best hops in four quarts of water, half an hour; then strain it and let it cool to milk warm; then add a small handful of salt and half a pound of brown sugar; beat one pound of flour with some of the liquor, and mix all together. The third day, add three pounds of potatoes boiled and mashed, and let it stand until the next day; then strain it and it is ready for use; stir it frequently and keep by the fire while making, and stir well just before using it. This is very strong, and only half the usual quantity is required.

A LONDON paper thus describes the process of road making now generally adopted in the larger places of both England and France: The road is first prepared by being loosened with pickaxes, then covered with ordinary granite, above this a dressing of sand is laid, the whole is then watered. An immense roller, propelled by steam, is then moved slowly over the prepared surface. It exerts a pressure of twenty-eight tons, and the result is that, in an unusually short time a firm and compact macadamized road is formed.

CALOCHORTUS LEICHTLINII.—(Hook.)

It is our intention in this Journal to give, as time and space will permit, short descriptions of plants indigenous to California. We have a large number of plants, which are much admired in the East and Europe, for their beauty, but which are overlooked and neglected by us. In bulbous plants California is particularly rich, and one of the finest is the *Calochortus Leichtlinii*. This plant is to be found in most parts of the State, from the Coast Range to the Sierra Nevadas. It seems to seek dry hill sides, and flourishes well on the high stony ridges of our mountain ranges. It commences to bloom about the first of May, and continues until the middle of July. It is, as we have said, a bulbous plant, with glaucous grass-like leaves, the flower stalks bearing from two to three flowers. The calyx is formed of three lanceolate sepals, of a somewhat greenish color, streaked with red. The petals are of a pure white, with a purple spot at the base. The flowers generally open in pairs. There are two other varieties of *Calochortus* in California, one a light-yellow, the other a pinkish white.

SELECTION OF LOCALITIES FOR ORCHARDS.

It frequently occurs that those orchards situated on the foot-hills and among the highlands of the Sierra Nevadas, are injured by late frosts. It would be well for our cultivators to investigate this matter; if a remedy can be found for the evil, let it be applied. It is a prevailing practice among our highland gardeners to occupy the very lowest portions of those highlands, the alluvials and moist lands along the streams, and the low and wet patches around the numerous large springs, that issue forth at a low level among the hill-sides, as orchards. The necessity for irrigation in the successful production of fruits, save in such localities as are naturally watered, has hitherto prevented many from attempting the cultivation upon the more elevated grounds; yet there are good reasons why, in many localities, these elevated lands are the best for fruit growing, provided they can be irrigated; and an important one among the reasons that might be adduced, is their almost certain immunity from late frosts, while the low grounds in their immediate vicinity suffer from the infliction.

We endeavor to account for these phenomna, if such they are, in this way: During the greater part of spring and summer, the prevailing winds among the highlands or foot-hills of the Sierras, heated and rarified from the lower valleys, sweep upward during the day; this action is reversed at night; a cold wind then rolls down from the snowy summits of the higher mountains; the colder currents, from their density, following more directly down the bottoms of the narrow valleys and ravines; these from their pent up situations, have been the most heated during the long and cloudless days. This cause alone subjects them to very great and sudden changes of temperature.

We would assign as another reason that the alluvial or bottom lands of the ravines and mountains, being what may be termed black-lands, simply from the fact that the land is black or dark, absorbs more of the sun's rays and heat during the day than do the lighter colored soils of the uplands, at the same time that the power of radiation, or throwing off the heat from the same cause—color—is far greater when the sun is withdrawn, thus lowering its heat more rapidly than the highland or light colored soils during the night. Thus it is that fruit trees on black lands and in low situations, are forced prematurely into bloom by the heat of the day, only to be made the more liable to injury from the frosts of the succeeding nights. These sudden changes to the two extremes prevail in all the low grounds of the foot-hills to a far greater extent than upon the surrounding highlands, or even in the broad low valleys of the Sacramento and San Joaquin rivers.

The diurnal ebb and flow of the great wind tides of California, to and from the mountains, is one of the various striking peculiarities of her climate; in many places producing results

upon vegetation, quite local in character; its effects therefore upon the introduced vegetation of the country should be carefully noted. Those upon the indigenous vegetation are apparent to any one who gives the subject proper attention, and should be duly considered before determining upon a location for orchard or fruit-growing purposes, as doubtless in many instances it will lead quite as unerringly to the proper position, soil, altitude and exposure, which are adapted to the production of fruits among the highlands, as can be otherwise obtained except by years of experiments.

The difference in the vegetation upon the north and south sides of the same deep ravine or narrow valleys, lying east and west, is everywhere apparent in California, and would at once indicate, which of the two, would be most likely to prove favorable to the culture of an introduced vegetation. Nevertheless, if proper artificial irrigation can be secured, the positions so marked out by the natural vegetation, as the best for its growth without such irrigation, may be directly reversed; for as the rays of the sun nowhere destroy the vegetation of a country, which, at all times is sufficiently supplied with moisture, so our success in many localities may yet be found to depend more upon the artificial irrigation with the proper altitude, than upon position naturally favorable without such irrigation.

There are among the Sierras, elevated tracts of country far above the present limits of our introduced fruits, where the common wild Plum, the Choke Cherry, Gooseberry, Whortleberry, and California Chestnut, are produced in great abundance, and from recent examination, the present season will not be an exception, notwithstanding the late frosts killed the fruit of the same description of Plum trees, that after having been trans-planted, have for two years produced their fruit in the ravines and valleys of the foot-hills. It will be noticed, however, that these Plum trees, with other fruits and nuts in their natural positions, occupy almost invariably the broad tops of the great ridges, instead of the sides and bottoms of the ravines and hollows. Thus it seems that if we were to follow nature to some extent in the selection of our fruit and orchard grounds, with a due regard to a supply of moisture in the soil, either naturally or by artificial means, we may find that no more hazard attends the cultivation of the ordinary fruits of our latitude among the highlands, or even the mountains of our State, than is incident to many other apparently far more favorable localities.

THE RAMIE.

Some time since we drew the attention of our readers to the Ramie plant, as most successfully cultivated by Mr. J. S. Finch, resident near Haywards, Alameda Co. We understand that the plantation is a continued success and well worthy of a visit from those interested in the raising of textile material, as well as from agriculturists in general. To those who cannot go so far to see the Ramie, we are pleased to say that there are several plants in a highly flourishing condition at "Woodward's Gardens." We understand that several successful experiments have been tried in feeding silk worms with the leaves; thus the whole of the plant can be utilized, as the refuse after the separation of the fibre is spread around the plants as manure.

THE SLEEP OF FLOWERS.—Almost all flowers sleep during the night. The marigold goes to bed with the sun, and with him rises weeping. Many plants are so sensitive that their leaves close during the passing of a cloud. The dandelion opens at five or six in the morning and shuts at nine in the evening. The goat's beard wakes at three in the morning, and shuts at five in the afternoon. The common daisy shuts up its blossoms in the evening and opens its 'day's eye' to meet the early beams of the morning sun. The crocus, tulip and many others, close their blossoms at different hours toward evening. The ivy-leafed lettuce opens at eight in the morning, and closes forever at four in the afternoon. The night-flowering cereus turns night into day. It begins to expand its magnificent sweet-scented blossoms in the twilight, is in full bloom at midnight, and closes never to open with the dawn of day. In a clover-field not a leaf opens until after sunrise.

PHANTOM OR SKELETON LEAVES.

Skeleton leaves are among the most beautiful objects in nature, and as they can be arranged either in groups under glass shades, made into pictures, as it were, and hung against the wall, or placed in either blank-books or albums, they come within the means of all; and can be used to decorate the palace or the cottage. The most suitable leaves for the purpose are those from what botanists call *exogenous* plants, and may be known by the veins of the leaf branching from a central vein or mid-rib; those from *endogenous* plants rising from the base and curving towards the apex of the leaf. The object in view is to destroy what may be called the fleshy part of the leaf, as well as the skin, leaving only the ribs or veins.

The most successful, and probably the simplest way to do this, is to macerate the leaves in rain water till they are decomposed. For this purpose when the leaves are collected they should be placed in an earthen-ware pan or a wooden tub, kept covered with rain water, and allowed to stand in the sun. In about a fortnight's time they should be examined, and if found pulpy and decaying, will be ready for skeletonizing, for which process some cards, a camel's-hair brush, as well as one rather stiff (a tooth-brush for instance), will be required. When all is prepared, gently float a leaf on to a card, and with the soft brush carefully remove the skin. Have ready a basin of clean water, and when the skin of one side is completely removed, reverse the card in the water and slip it under the leaf, so that the other side is uppermost. Brush this to remove the skin, when the fleshy part will most likely come with it; but if not, it will readily wash out in the basin of water.

If particles of the green-colored matter still adhere to the skeleton, endeavor to remove them with the soft brush; but if that is of no avail, the hard one must be used. Great care will be necessary to avoid breaking the skeleton, and the hard brush should only be used in a perpendicular direction, (a sort of gentle tapping) as any horizontal motion or "brushing" action will infallibly break the skeleton. Never attempt to touch the leaves or the skeleton in this state with the fingers as when they are soft their own weight will often break them.

A very good way of bleaching the skeletons is to prepare a solution of chloride of lime, which must be allowed to settle, and the clear liquid poured into a basin, in which the skeletons may be put by floating them off the card. It is as well to have half a dozen ready to bleach at once, as they require watching, and if allowed to remain in too long will fall to pieces. From two to four hours will generally suffice to bleach the skeleton of all ordinary leaves, after which they should be washed in several changes of water, and finally left in clean water for half an hour.

After the leaf has been sufficiently washed it should be floated on to a card and dried as quickly as possible, care being taken to arrange the skeleton perfectly flat, and as near as possible to the natural shape. This can be done with the assistance of the soft brush. When dry the skeleton should be perfectly white, and should be mounted on dark backgrounds, as black velvet or paper.

Well grown leaves should always be chosen, and be thoroughly examined for flaws before maceration. Leaves containing much tannin cannot be skeletonized by this process, but are generally placed in a box with a number of caddis worms which eat away the fleshy parts, when the skeletons can be bleached in the usual way. Holly leaves must be placed in a separate vessel on account of their spines, which would be apt to damage other leaves; they make beautiful skeletons, and are sufficiently strong to be moved with the fingers.

PRUNING is to be done before growth begins. In pruning neglected trees, the object should be to get an open and well-balanced head. Take care that a bad wound is not made by the falling of the limb when partly sawed off. Pare wounds smooth, and cover them with melted grafting wax or paint, which may be tinted, to be less conspicuous.

SEEDS, of all kinds, likely to be needed, both for the farm and garden, should be early provided, and tested in pots or boxes, to prevent disappointment.

LETTER FROM THE BOTANIST.

The following has been received from Dr. C. C. Parry, Botanist of the Department, now with the San Domingo Commission:

SAN DOMINGO CITY, *February* 13, 1871.

Dear Sir:—I have the honor to report that since arriving at this point I have been closely occupied in making observations and collections of matters of interest connected with the agriculture and natural resources of this district. As first fruits of our labors, I send by the Tybee steamer, direct for New York, three boxes, two of which contain dried plants, (so marked;) the larger one contains articles for the museum, including native fibers, cordage, commercial woods, and such articles of native produce as will bear transportation. The fiber called *Kamote*, is the product of *Fourcroya Cabense*, and yields enormously. I hope to send some bulblets of this plant that may be grown in the green-house.

This is not the best fruit season, and most of the native fruits will not bear transportation, but at the last point we shall stop at, I shall endeavor to secure some of them for modeling. All investigation tend to show the vast resources of this country, which are hardly touched through imperfect methods of culture and want of enterprise. Our collection of plants will, I think, number over five hundred species, and we hope to lay in a good stock of seeds and live plants before leaving. I have found Mr. Shumacher very friendly and obliging. I have visited him at his residence, two miles from town, on the sea beach—a delightful residence. He has the *Fourcroya Cabense* growing in his grounds, and is engaged in making experiments in producing the fiber from the green plant by machinery.

My assistant, Mr. Brummel, has been away on an expedition into the country for twelve days; is expected this week. My associate, Mr. Wright, is also absent on an expedition across the country.

I cannot ascertain certainly what will be the movements of the Commission, but I judge there will be no particular haste about returning. I shall try to improve all the opportunities that the different movements offer. There is no doubt large sections of the mountainous districts are adapted to the growth of *cinchona*. The frequent rains and cool, misty atmosphere, and elevation above the sea, absence of frost, etc., supply all the conditions of successful culture. A fair topographical map would enable one to lay down this cinchona district with tolerable correctness.

The woods of the country are numerous and exceedingly valuable; will constitute one great item of the wealth of the country. I have found coffee growing wild by the roadsides. On all these points I hope to present some interesting data in my final report.—*Monthly Report, Department of Agriculture, February.*

SILK CULTURE.

The correspondence which follows, with regard to a new species of silk worm to be forwarded from Calcutta, in India, and authorized to be received by Mr. Horace Dunn of this city will explain itself. Mr. Dunn has not received the worms yet, but is daily expecting them. He intends, when the worms arrive, if they are in sufficient quantity, to distribute them to the different silk-growers throughout the State, who may desire to possess them, if they will pledge themselves to report results to the Commissioner of Agriculture at Washington City:

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., Feb. 1, 1871.

Horace D. Dunn, Esq., San Francisco, Cal.—Dear Sir:—This Department has just received advices from Nathaniel P. Jacobs, United States Consul-General, Calcutta, of the shipment of a package containing live cocoons of the "Atlas" silk worm; also a package of hedge seed, both consigned to the Collector of Customs, San Francisco.

The cocoons are intended for experiments in California, as per letter of Mr. Brownlow, the donor, a copy of which I herewith enclose as a guide to those who may take part in the experiment.

I beg to put this matter in your hands, with the request that you will call upon the Collector (who will be directed by the Secretary of the Treasury to pass both parcels free of duties and customs charges), and take charge of the cocoons and seeds, and put the former in the right hands, one of which I would name —Mr. Joseph Neuman, at your discretion.

Please to have it understood that a full report of the result of experiments be made through you to this Department and to Mr. C Brownlow, care of N. P. Jacobs, United States Consul-General, Calcutta, East India. I beg to request further, that if this trial proves a success, you will cause to be forwarded, at the proper season, a few of the live cocoons to this Department.

Please advise me of your action in the matter.

I am, very truly,

HORACE CAPRON,
Commissioner.

P. S.—The pamphlet to which Mr. B. refers in his postscript did not come by the mail. It will probably be found in the package.

The American Consul, Calcutta—Sir: I take the liberty to forward to you a small package of live cocoons of the "Atlas" silk worms, which I trust you will cause to be forwarded to California by the Pacific route, so as not to have to encounter another winter. With this precaution, I have little doubt of their surviving, and the moths may be looked for at the commencement of summer—perhaps not before May or June in California.

The worm will feed on almost anything, hence my wish to see if the California folks can make anything of it. The eggs should be divided into a good number of batches, and a batch put on one of a number of trees, the other batches being similarly disposed, it will soon appear on which of the trees the worms feed, and on which they do not. I have scarcely any doubt but that some trees will be found on which it will thrive.

I must also trust to you to see that the cocoons get into good hands—of somebody who understands how to train the worms. I have no doubt there are many such in the colony.

I would recommend the eggs being placed out of doors if not very cold, inside a pocket handkerchief, in which the young worms should feed with plenty of room for a week. The handkerchief should, of course, be tied on the end of a twig of the tree.

When the moths come out, they should be placed inside a large net or airy room, where the males will visit the females. From 250 to 400 eggs will be procured from each female.

The silk is not reelable, but cards well, and the beauty of the worm is that it eats almost anything, and spins a very large cocoon. In conclusion, I trust to receive an account of how they succeed. Trusting you will excuse the apparent liberty I take in forwarding the things through you, I remain, dear sir,

Yours, faithfully,

C. BROWNLOW.

WOODLANDS, CACHAR, November 25, 1870.

I send a small pamphlet, giving names of trees fed on by the "Atlas," which please send to California along with the cocoons.—*Call.*

WHAT EATS FARMERS UP.—The fences of the United States are estimated to have cost more than the houses, cities included; more than the ships, vessels and boats of every description, which sail on the ocean, lakes and rivers; more than our manufactories, with all their machinery; and more than any one class of property, real estate alone excepted. These are curious facts, but they are facts, nevertheless. The fences of New York are put down at $144,000,000; those of Ohio at $115,000, and of Pensylvania at $120,000,000. Divided out at this rate, the money invested in fences alone is more than equal to the national debt. As fences must be renewed, on an average, once in ten years, the annual cost to the country, is not far short of $200,000,000.

"ANY soap-grease to-day, ma'am?" "No, sir; I use my own soap-grease." "Make your own soap?" "No, sir," "How do you use your own soap-grease then?" "I make it into eggs," I said smiling. The man looked so astonished and half frightened that I thought it time to explain. "I feed the grease and fat which is unfit for cooking to the chickens."

OUR DOMESTIC PROSPECTS.

It is evident from reports which reach us from every part of the State, that we are marching forward in the way of progress, and it is well to review from time to time the efforts of our enterprising men.

Forest Trees.—Mr. Stratton, of Alameda Co., has 53 acres planted out for forest culture, mostly of the *Eucalyptus* or Australian Gum. The seed for which was gathered from seven year old trees of his own.

Mr. Aiken, of Sacramento Co., has a plantation of 5,000 Balms of Gilead; 7,500 *Morus multicaulis*; 5,000 *Morus Alba*; 10,000 California black walnut; 4,000 American white maple; 5,000 American elm; 2,000 English elm; 400 Spanish chestnut; 500 American chestnut, all so far in good condition.

Mr. Edwards, of Sacramento Co., has planted out 7,000 locust trees for forest culture.

Tule Lands.—From Vallejo, we hear that tule farming is being carried on successfully this year, several thousand acres have been cultivated.

Near Rio Vista, several hundred acres are being cultivated.

Ramie.—Near Haywards, in Alameda Co., over 200,000 ramie plants have been set out during the present season, and its success is conceded by those who ought to know.

The cultivation of the ramie plant is attracting attention in Santa Clara Co., among the farmers there; Judge Graham, of Haywards, has planted 90,000 roots of the ramie plant.

Mr. Nourse, of Chico, is also making an experiment by planting two acres with the ramie plant.

Oranges.—General Vallejo has been shipping a considerable quantity of oranges, which he has raised in Sonoma Co., and which are said to be superior to the oranges coming from Los Angeles. He sold them at from forty to fifty dollars per thousand, and has obtained 15,000 oranges from thirty trees.

In Dacoto, according to the *Rural Press*, 5,000 orange and lime trees have been planted out this year. Several thousand orange and lemon trees have been planted in the neighborhood of Oroville; so far, the prospect of their successful cultivation seems encouraging.

Fine oranges have been raised in the open air by Mr. Snowball, of Knight's Landing.

Mr Van Lusen, in San Bernardino, has produced oranges weighing one pound.

Castor Oil Beans.—The cultivation of castor oil beans has been inaugurated in Los Angeles County.

Over 200 acres of castor oil beans are cultivated near Marysville this year; a heavy yield is expected.

Silk Culture.—On the road between Grass Valley and Nevada, 10,000 Mulberry trees have been planted this season. Mr. Iscard, of Nevada City, has now over 8,000 Mulberry trees in cultivation. Mr. Mills, of Contra Costa, has on his plantation about 4,000 Mulberry trees of the different varieties.

Some 30,000 Mulberry trees and cuttings have been planted out near Martinez this season.

Napa Valley devotes also a great deal of attention to silk culture; a large number of Mulberry trees have been set out there this year.

Mr. Brannan is cultivating 10,000 Mulberry trees and 30,000 Ramie plants at Calistoga.

The Grape.—In El Dorado county, more grape vines have been planted out this year than ever before. The Grape can be cultivated there profitably, at from three-quarters to one cent per pound. Mr. Bugby is largely interested there, and says that he can afford to pay $25 per ton for grapes, if delivered at Shingle Springs.

In Nevada county, several new vineyards have been planted with foreign grapes; some of our best wines are expected to be made there.

Gen. Bidwell, of Chico, has now 50,000 grape vines planted, besides 8,000 fruit trees and over 2,000 acres in grain. The distillation of brandy from grapes is much encouraged in the counties of Los Angeles, El Dorado Napa, Santa Clara, San Bernardino, Sonoma and Yolo. These counties, in 1868, produced over 257,000 gallons, and the yield has in-

creased ever since. Mr. Bugby, of the Natoma vineyards, has done much in that direction; he advocates the Johnson process of distillation, by which he obtains 50 gallons of brandy out of one ton of grapes.

Napa Valley has now about 1,700,000 grape vines, from which last year 315,000 gallons of wine were produced, besides distilled liquor.

Sugar Beet. — Enterprising men of Santa Barbara are about to erect a factory for the manufacture of beet sugar.

The Alvarado Beet Sugar Company is planting extensively; they commenced work last February; enough beets are expected to be raised this year to keep the mill running to its full capacity. Experiments show that the most desirable soil for sugar beet is a deep, rich, light loam.

The cultivation of the sugar beet and the manufacturing of beet sugar will be attempted in Sacramento and San José this year.

Sundries.— In Burns' valley, Dr. Delamont is cultivating ten acres of opium poppy.

In Yuba county the cultivation of the cocoanut is being attempted with some prospect of success.

Tea plantations have been set out near Calistoga, but we have not heard anything about their success so far.

Our southern counties are making strong efforts to introduce cotton culture, and a number of acres are cultivated for that purpose this year. This movement is being closely watched, and we wish it every success.

THE ROSE OF SHARON is one of the most exquisite flowers in shape and hue. Its blossoms are bell shaped, and of many mingled hues and dyes. But its history is legendary and romantic in the highest degree. In the East, throughout Syria, Judea and Arabia, it is regarded with the profoundest reverence. The leaves that encircle the round blossom dry and close together when the season of blossom is over, and the stalk withering completely away from the stem, the flower is blown away at last from the bush upon which it grew, having dried up in the shape of a ball which is carried by the sport of the breeze to a great distance. In this way it is borne over the sandy wastes and deserts, until at last, touching some moist place, it clings to the soil, where it immediately takes fresh root and springs to life and beauty again. For this very reason the Orientals have adopted it as the emblem of the Resurrection.

THE ROAD TO SUCCESS.

As far as we can at present ascertain, the prospect of bountiful crops to our horticultural and agricultural men are very good, although, before the last rain set in, we had ample reason to fear for them. Indeed our last rains have been an incalculable benefit to our State. Everything now looks encouraging for the farmer, and we anticipate that business in general will brighten up. So long as we depend entirely upon the returns from our gold and silver mines, much less importance was attached to the produce of our fields, the consumer was dependent on the importer, and prices paid were governed by the foreign markets, and subject to the manipulations and combinations of our commercial men, who very often monopolized the supplies and took advantage of the consumer; but time has brought about a change which is now effecting great improvements in our system of business, and if home produce and home manufactures are encouraged and assisted by capital, and if our cultivators will co-operate in forwarding the best interests of our State by the inauguration of a more enlightened system of farming and gardening, we may in a short time realize those expections which our most prominent farmers and horticulturists, both here and in the East, are anticipating for us.

If we were to-day to gather up all the practical information which has been made public in print, we might fill volumes with facts which most effectually prove the enormous resources of California; and if we were to gather the advice and suggestions which have originated with men of practical experience, we should be able to bind up other volumes in almost every department of agriculture and horticulture, but although our progress has been enormous, yet our success is not so much attributable to our own engineering as to the productiveness of our soil, to the superiority of our climate, and to the existing mineral wealth of our own and the neighboring States, which lavishly paid for our produce when we made our first attempts to develop our agricultural and horticultural resources.

When we take into consideration the facilities which we have for farming and gardening, we are inclined to believe that we have been slow in availing ourselves of the experience and suggestions so often repeated, and with deep regret we see that a large majority of our cultivators still adhere with unwarranted stubborness to many antiquated systems and ways of their own. This state of things cannot last much longer, without proving detrimental to our interests.

There was considerable alarm manifested about the scarcity of rain during our present season. We have seen various districts, and have received information from many others, and we have come to the conclusion that one-half of the crops were ploughed and sown too late, and there is no doubt that, while early sown crops would have matured well even with less rain, the late sown crops would have suffered terribly if the late rains had not come just in time. So often as it has been repeated that deep ploughing and early sowing and planting are our only safeguards against drought, yet there are some who still advocate shallow ploughing, and others who always manage to be behind time.

We hope, most sincerely, that our farmers will open their eyes and ears and will recognize deep ploughing and early planting and sowing as one of the chief elements of success, and the result will be less anxiety and fear if the rain does not come just exactly when it is wanted.

HINTS ABOUT FLOWERS.—House plants ought to be stimulated gently once or twice a week. Rain water, so refreshing to summer flowers, always contains ammonia, which also abounds in all liquid manures. If you take an ounce of pulverized carbonate of ammonia, dissolved in one gallon of water, it will make spring water even more stimulating to your plants than rain water. If you water your plants once in two weeks with guano water (one tablespoonful to a pail of water), they will grow more thriftily. Chicken manure dissolved in water is excellent. Always keep the soil in your flower-pots loose. A common hair pin used daily, will stir the earth sufficiently.

THE subject of selling fruits and vegetables by weight is being agitated again in the West. They think that this system would be the fairest both to the purchaser and the vender.

AGRICULTURAL AND HORTICULTURAL WORK FOR MAY.

Although the season for planting trees and shrubs may now be said to have closed, yet doubtless a great many ornamental trees will be planted out where water can be obtained for irrigation.

Our rainy season having commenced much later than usual, and the quantity which has yet fallen being less than the average, as a consequence many people have hesitated to plant extensively, but our last rains gave a fresh impetus, and as we may fairly expect some later rains, which should they fall will be even more beneficial than our usual copious rains during the winter. Deciduous trees and shrubs, and such evergreens as will stand trimming, may still be transplanted as late in the season as this, by cutting in close, giving a good soaking after planting, and mulching; this will be particularly necessary where water for irrigation is scarce.

In the orchard, all operations may now be suspended, except keeping the ground clear from weeds and looking after insects. We have frequently given various methods of treatment to destroy them, and shall continue to publish all information that may reach us. Clayey soils should now be ploughed the second time to make the ground more porous; it will help the trees, destroy weeds, and make it uncomfortable for certain insects.

The vineyard should be let alone—inexperienced hands may do much damage in working among the vines, as the young shoots just starting are very easily broken off. An experienced man, however, may do much good, by going over the vines and breaking off those young shoots which start from the ground or from the main stock. These young shoots take away a great deal of nourishment, which the bearing shoots cannot well spare.

In the kitchen garden there is a busy time coming; the transplanting of cabbage, cauliflowers, tomatoes, head lettuce, peppers and celery, should be continued in fresh prepared soil; corn, beans, cucumbers, etc., should be hoed carefully and the weeds thoroughly

cleaned out. Where snails are troublesome, apply lime, and when insects begin to show themselves, use a thin solution of whale-oil soap, which may be sprinkled over the plants twice or three times a week.

In the flower garden, every day develops something new, and at no time during the year do plants appear so interesting and instructive as at the present. New acquisitions of bulbs which have been planted during the past months are growing up and will be anxiously watched to welcome the first appearance of a flower bud, while new seeds are coming up and are carefully freed from the surrounding weeds. The ground around the plants should be kept loose, but care must be taken not to trample on the young plants and bulbs just sprouting, nor to break off the young and tender shoots of your older plants. Ignorant and pretentious gardeners often destroy many young plants and bulbs, and then the seedsman is wrongfully accused of selling worthless seeds.

Green-houses and conservatories should have fresh air during the greater part of the day, if the weather is not too rough. House plants should also receive daily airing; a close watch should now be kept for insects, and the remedies applied as directed in former numbers of this magazine. Water freely while the plants are making their new growth and forming their flower buds; but as the day may be very warm, while water from the well or from water pipes may yet be very cold, it is advisable to expose the water to the warmer temperature of the green-house before using it for irrigation. If plants are kept too far from the glass there is danger that the young shoots may grow up too tall and slender; the evil may be remedied by pinching off the young shoots before they make their flower buds, so as to obtain bushy plants, which will give more flowers and present a better appearance.

SPREADING MANURE.—In spreading manure, care should be taken to scatter it evenly over the land, breaking to pieces all large and hard lumps. This should always be done immediately, or not more than a half a day before plowing, especially if the weather is dry and very windy. The manure should be plowed under before it dries very much, or loss will accrue.

GROWING FOREST TREES.

We have repeatedly alluded to the necessity of growing forest trees in California. It seems that the attempts made so far were not calculated to cultivate the most valuable timber. It is well to look into this matter more thoroughly and to inaugurate the planting of such trees as will be most valuable for timber.

The *Western Pomologist* recommends the following deciduous trees for forest planting. The Chestnut, Black Walnut, Hickory nut, White and Sugar Maple, White Ash, Elm and Birch, all of which are very desirable and easily raised from seed.

California has its peculiarities in climate and soil, and we cannot adopt the above list entire; however, some of them have been neglected entirely, when we have every reason to believe that they can be grown here very satisfactorily. The Chestnut makes valuable timber, but may be considered slow growing on the Pacific coast, which is an objection. The Black Walnut is also a very valuable timber tree, and we are importing every year an immense quantity of this wood, which should be grown here. The tree grows well in all parts of the State. The Hickory, which is used so extensively in the East, has not been cultivated here yet to any extent. By proper treatment the Hickory would grow well here. The Maple is a very rapid growing tree in California, but so far no attempt has been made to cultivate it very extensively. The Elm is well known throughout the United States, and is used very extensively for ornamental purposes; its timber is also valuable. We should like to see this tree cultivated extensively. The Birch, we are inclined to believe, will not succeed well in California. Some varieties of the Birch have been in cultivation in Oakland, and with some success, yet our climate here is not cold enough, and as far as its timber is concerned, we think but very little of it.

Besides those mentioned above, we have many other trees in cultivation on this coast now which are well adapted for forest culture. The Eucalyptus, (or Australian Gum) is a

very fast growing tree, and some of the varieties produce an excellent timber. The Redwood, which is a native of this State, must rank among the very best of forest trees; but its cultivation must be confined to the sea coast. It will not grow outside of the sea fogs. The Oak furnishes a very valuable timber for various purposes. However, it seems to grow rather slow in this country. The California Laurel is well known in California, but its cultivation has not been very successful. There is no doubt that this tree can be grown very successfully and would be profitable. The Locust grows rapidly and without any trouble, but its timber is not so useful as that of the others.

There are various kinds of Pines and other coniferæ indigenous to California, which could be cultivated profitably, and we hope that our next legislature will take this matter in consideration, and offer some good inducement for forest tree cultivation.

NEW AND RARE PLANTS.

The *Gardeners' Monthly* speaks of a new Centaurea, which is much superior in elegance of foliage to all others; it is called *Centaurea clementei.* The same journal also gives an illustration of a new crimson-flowered Mignonette, of which the anthers are of a dark crimson, instead of a brown, as in the common variety.

Œnothera Whitneyi, or *Godetia Whitneyi* as it is also called, is a splendid evening primrose, which was discovered in Humboldt County, California in 1867, but has not been brought to public notice until within the last year. The *Gardeners' Chronicle*, (London,) speaks very highly of it. The plant is from 12 to 15 inches high, and has its upper portion completely covered with flowers from 3 to 4 inches in diameter, of a beautiful rose color, with a dark crimson blotch near the centre of each petal. This plant is said to have been in cultivation in England as early as 1842, but as no seeds were saved, it disappeared from cultivation until its re-introduction in 1867. However this may be, its present introduction is due to Prof. H. N. Bolander, of this city.

HOW TO KEEP A THOUSAND HENS.

With a flock of one thousand fowls at least six acres are requisite. Some have given this rule:

An acre to each hundred. This area should be fenced in with boards or pickets, and houses erected, large enough to accommodate one hundred fowls for roosting, shelter from storms, and laying. It is not essential that these houses should be expensive, but they should face the south, and the fronts should be partially or entirely glazed. The glazing should be by sashes, which may be opened easily by hinges above, and may be left open through the summer to permit a free circulation of air. The care of these houses should be entrusted to a capable person, as on their proper management the success of the poultry largely depends. In addition to the poultry houses, there should be provided numbers of low sheds, beneath which the fowls may take shelter from the heat of the sun or from storms. Care should be taken to prevent the ingress of vermin, skunks, weasels, etc., to the grounds, and one or more good dogs should be confined within the enclosure, care being taken to secure dogs which will not trouble the fowls, but which are good watch-dogs, and vigilant. An abundance of pure water is absolutely necessary, and unless a brook runs through or a pond is located on the land, water should be brought by a ram, or pumped by a windmill from a well. Fowls drink a great quantity of water, and it should be of as pure quality as can be obtained. The preparation of the grounds, and building of houses and sheds having been completed, the stock may be procured. For all practical purposes the common dung-hill fowl is as good as any, as we have proved completely to our satisfaction. In selecting a stock, take hens from one to two years old, bright-eyed, red-combed, clean-legged fowls, as large and well-formed as can be obtained. There is no need of a crower with the large flocks, the breeders being selected and kept separate from the others; for laying purposes, hens do better away from a cock than with one, and if a number of male birds are together, the fights and troubles are

incessant. The care of the poultry is not great after they are placed in the park. The fowls selected for breeding purposes should be kept in flocks of twenty, in yards separate from the others, and each of these small flocks should have a male bird. These birds should be the very best to be obtained, strong, well-formed, and hardy, and the cock should be two years old, healthy, strong and courageous We believe that a Brahma cock, such as we have described, crossed with the dung-hill fowls, would get better and more marketable chickens than would any other breed. This, however, is for the poulterer to decide.

INSECT LARVÆ.

The practical question remains, whether any general rules can be established by which we can know what form the noxious larvæ we meet with will ultimately assume?

In order to understand what follows, it is necessary to state that larvæ have legs of two kinds; first, the true legs, representing the legs of the perfect insect, which are comparatively firm, conical, and jointed, and which, when present, are almost always six in number, and attached to the first three segments of the body. Secondly, the spurious legs, or prolegs, which are short, thick, muscular, and unarticulated, varying in number from two to sixteen, and attached to one or more of the eight last segments.

1st. *Generalisation.*—All larvæ generally known as caterpillars, and distinguished by having both legs and prolegs, produce either Lepidoptera, or saw-flies in the order Hymenoptera; and the larvæ of the saw-flies are distinguished from those of the Lepidoptera by having more than five pairs of prolegs; and by having only two eyes, whilst the true caterpillars have ten or twelve, and also by their habit of rolling themselves into a spiral coil.

2d. As a general rule, hairy caterpillars produce moths, whilst spiny or naked ones produce butterflies or sphinges. The rule may be more accurately stated thus: all densely haired caterpillars produce moths, but all the larvæ of moths are not hairy. The caterpillars of the butterflies and sphinges are either naked or ornamented with spines, or with very short or scattered hairs.

3d. Wood-boring larvæ belong mostly to the Coleoptera; but also to a few families of the Lepidoptera, namely, the Ægeridæ, the Hepialidæ, and a few exceptional Tortricidæ. The larvæ of the Lepidoptera can always be distinguished from those of the Coleoptera, by the presence of prolegs on the intermediate segments. A few Coleopterous larvæ have one pair of prolegs on the anal segment, but more generally only one such leg.

4th. All leaf-sucking larvæ belong to the order Hemiptera (including the Homoptera.)

5th. All leaf-gnawing larvæ, excepting grasshoppers and the caterpillars above treated of, belong to one tribe of Coleoptera, distinguished by the title of Phyllophaga, or leaf-eaters and comprising the four families Crioceridæ, Galerucidæ, Cassididæ, and Chrysomelidæ. These larvæ, moreover, can generally be identified by their short, wrinkled forms, their sluggish motions, and some of them by the singular habit of protecting their bodies by their own excrement.

6th. All larvæ found underground, excepting those which enter it only for the purpose of undergoing their transformations, are divisible, according to their habits, into two sections. First, the subterranean larvæ, properly so called, which live under ground, and feed upon the roots of plants; and, secondly, those which subsist above ground, but burrow into it, when not feeding, for the purpose of concealment. True subterranean larvæ are found in the orders Coleoptera, Hemiptera, Homoptera, and Diptera. None of the last order, except a few of the Tipulidæ, have ever been known to multiply so as to be seriously injurious to vegetation. But in the Coleoptera, we have the well known white grub of the may-beetle, and the large grape-root borer, in the family Prionidæ; and belonging to the Homoptera, is the pernicious Apple tree root-louse. The second section is limited almost exclusively to the notorious tribe of cut-worms, all of which belong to the family of Noctuidæ, in the order Lepidoptera.

These are a few of the more obvious general results which we derive from the observation of insects, under the two limitations of noxious habits and the larval state. Others, less remarkable, perhaps, but equally interesting, would be suggested by a more minute study of the subject.—*Dr. W. Le Baron, in "American Entomologist."*

WOODWARD'S GARDENS.

We recently visited these gardens, and were much gratified by the many improvements in progress. Among these the public will doubtless find the great assembly-room, amphitheatre, hall of recreation, or by whatever other name it may be designated, which is now in the course of erection, and which will soon be finished, a means of amusement suited to the taste of a large majority of the visitors. For ourselves, the magnificent appearance of the really superb collection of Acacias, now in full bloom, together with the luxuriant growth of the various evergreens and deciduous trees and shrubs, were a source of extreme pleasure. Other plants also attracted our attention–a fine specimen of *Dracæna fragrans* coming into bloom, the *Phormium tenax* (New Zealand flax), pushing forth its flower stems, the Ramie plant, with others too numerous to mention here; while within the conservatory, tropical-house, etc., etc., we found a splendid collection of Azalias in full bloom; various varieties of the Coleus and other foliage plants in full leaf, and presenting a gorgeous appearance. This collection is very rich in foliage plants, having a fine relay of specimens in readiness to be brought forward. We were, in fact, much more pleased with the reserve than with those in exhibition. The Orchidaceous plants are also well represented. A *Banana* in flower, and forming its young fruit, attracted our attention, as did also four luxuriant specimens of *Anana*,(Pine-apple) now fruiting; by the way, we saw from 20 30 others equally promising in reserve. In fact these very interesting gardens are evidently increasing in public value, and we do not believe that they, although very popular, are appreciated as they deserve, affording as they do, not only recreation and amusement, but the means of study in botanical science, as well as intellectual improvement, and we hope that the enterprising proprietor will meet with ever increasing encouragement during the ensuing season.

EFFECTS OF GAS UPON PLANTS.

It is well understood that plants will not do well in a room where gas is burned; but that gas, which may escape from pipes running through a garden, will kill shrubs and trees in close proximity, is not generally credited; yet it has been proven that such is the case. In removing shrubs and trees which have died from some unknown cause, the ground was found to be saturated with gas, which had escaped from some open place in the pipes. (When plants or trees are lost, it will always be well to look for the cause, so that we map prevent similar loss in the future). To provide against this risk from gas, we would advise those who are about to plant their gardens, not to lay gas pipes where they intend to place their valuable trees or shrubs.

GOOD QUALITY APPLES.

It has always been our doctrine that the foot-hills of the Sierras will produce the best flavored and best keeping apples of any portion of our State. The *Rural Press* says, on this subject: "But a few years since all our winter apples came from Oregon. It is gratifying to know that now most of them come from the foot-hills of the Sierras, within our own State. A comparison of apples from Oregon and the Sierras, as they are found side by side in our market, is decidedly in favor of the latter. Our own apples are more juicy, finer grained, better flavored, and highly colored. The same varieties compared show the California apple in a much better state of preservation, and proves its keeping qualities to be superior. We have noticed a few boxes in the market lately, from some thirty miles above Placerville. They are much superior in all the qualities referred to above to those grown down towards the valley."

We have had considerable experience in fruit raising in Nevada Co., and we feel sure that the fruit grown in that part of the State would command a much better price in our market than that raised in the valleys. If the owners of orchards in that section will bring their fruit into our market, they will obtain good prices, and establish a good demand for their really superior productions.

OUR LATE RAINS.

During the latter part of March, discouraging news reached us from many parts of the State, caused by want of rain; however, one of the best showers we have had during this season came just in time to brighten up our prospects. This rain was general throughout the State, and the latest advices from the country are of a most cheerful character.

Reports from Visalia indicate a much larger grain crop than in any previous year, and represent the fields as in a fine condition.

The Castroville *Argus*, reports: The crops in that valley as looking splendidly, with excellent prospects of a bountiful harvest; the young grain is said to stand more regular, unbroken and vigorous in its appearance than ever before, and a much larger breadth has been sown in grain than usual.

Los Angeles will produce a larger crop of corn than ever before.

The *Encinal*, of Alameda, says: The late rains saturated the earth thoroughly. The grain prospects look much brighter than they did a week ago.

The San Joaquin Valley *Argus*, says: The rain has been general throughout the valley and will be a blessing to all. This fall of rain ensures large crops in many localities where total failures were expected.

The Monterey *Republican* reports a fine rain throughout the valley.

The Petaluma *Crescent*, says: That crops of Sonoma county never looked better, and will doubtless be the most prolific for years.

The Santa Cruz *Times*, says: The prospects for an abundant harvest never looked brighter.

OUR MARKETS.

The fruit season has just now commenced with a fair supply of strawberries, which are retailing at from 25 to 35 cents per pound. From various reports the strawberry crop promises fair. Apples from last year are plentiful, yet at 6 to 12 cents per pound. Of vegetables the supply of asparagus, green peas, and rhubarb is plentiful, while cabbage and cauliflowers are scarce. The quality of asparagus this year is better than that of last. We understand that a number of extensive and new plantations have been made this year. Large shipments of asparagus and other vegetables have lately been made to Chicago and New York. We hope most sincerely that the enterprise will be remunerative and that the articles shipped will be a credit to California. We understand that the fruit crop will be far above the average, this year. Cherries, plums peaches, etc., are more promising than ever.

PIEDMONT SULPHUR SPRINGS.

This beautiful summer resort is now ready for the accommodation of visitors, and thus we are enabled within an hour's ride, to enjoy every comfort the most fastidious may wish for. Those who are not fortunate enough to have their own equipage, can take the regular Omnibus Line at the Broadway Station in Oakland. The road leads through a fine farming district, which with its waving grain fields and flowering fruit trees makes a magnificent sight. As you ascend the hills, a most picturesque panorama is spread before you; with Oakland, Alameda, and the surrounding villa grounds at the foot of the hills; the city of San Francisco in the background, and our magnificent bay whose surface is dotted over by the many sailing and steam vessels plying on its waters.

On reaching Piedmont, visitors have magnificent parlors and rooms to their disposal, and Mr. Walkington will do all in his power to make their stay pleasant. The hotel is surrounded by ornamental grounds and groups of live oaks, embellished with comfortable

seats. Walks and drives make every point of interest accessible, the most prominent of which are the Sulphur Springs, surrounded by the most picturesque scenery of natural landscape.

We are very much in need of a resort of this kind, and the owners are public spirited men, who have invested a large amount of money to make this place what it is. Yet they are only in the beginning, and expect to add constantly to its attractiveness. Now it is for the public to show a due appreciation of their efforts, which will stimulate the owners to make Piedmont the most attractive and fashionable watering place.

FIRST ANNUAL EXHIBITION OF THE BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

TO OPEN ON TUESDAY, AUGUST 8TH, 1871, AND TO CONTINUE FOR FOUR WEEKS, AT THE PAVILION, UNION SQUARE, SAN FRANCISCO.

Premium List—(First Week.)

CLASS 1—FLORAL DEPARTMENT.

1. Best display and general collection of Flowering Plants in bloom. $20.00
2. Best collection of Plants, Indigenous to Australia..... 25.00
3. Best collection of Coniferæ, both Native and Foreign..... 20.00
4. Best collection of Plants for Greenhouse, Conservatory and Window culture..... 15.00
5. Best collection of Bedding Plants..... 10.00
6. Best collection of hardy plants with Variegated Foliage..... 10.00
7. Best collection of Bulbous Plants 10.00
8. Best 12 Specimen Plants..... 10.00
9. Best collection of Tropical Plants..... 10.00
10. Best collection of Climbing Plants, (not less than 25 varieties) 10.00
11. Best collection of Climbing Plants, (not less than 10 varieties) 5.00
12. Best collection of New and Rare Plants..... 10.00
13. Best collection of plants suitable for Hanging Baskets and Rockeries..... diploma
14. Best collection of Ferns..... 5.00
15. Best collection of Ornamental Grasses..... diploma
16. Best collection of Roses in pots or boxes, (not less than 20 varieties, in flower)..... 10.00
17. Best collection of Roses in pots or boxes, (not less than 6 varieties, in bloom)..... 3.00
18. Best collection and display of Cut-flowers..... 10.00
19. Pair of best arranged Wire-Hanging Baskets..... 5.00
20. Pair of best arranged Rustic-Hanging Baskets..... 5.00
21. Pair of best arranged Earthenware Hanging Baskets..... 3.00
22. Best Miniature Garden..... 40.00
23. Best design for a Suburban Garden..... 10.00
24. Best exhibit of Wire-work adapted for floricultnre..... diploma
25. Best exhibit of Flower-pots and Vases..... diploma
26. Best kept Flower Garden in the city of San Francisco..... diploma
27. Best kept Suburban Garden... diploma
28. Best kept Lawn..... diploma
29. Best exhibit of Rustic Work.. 10.00

CLASS 11—FRUITS.

1. Best and largest collection of Fruits..... 25.00
2. Best and largest collection of Apples..... 10.00
3. Best 12 varieties of Apples.... 5.00
4. Best and largest collection of Pears..... 10.00
5. Best 10 varieties of Pears..... diploma
6. Best and largest collection of Peaches..... 8.00
7. Best 10 varieties of Peaches... diploma
8. Best and largest collection of Plums..... 8.00
9. Best 10 varieties of Plums.... diploma
10. Best collection of Nectarines.. 5.00

11. Best and largest collection of Quinces.....diploma
12. Best and largest collection of Figs.....diploma
13. Best exhibit of Oranges.....diploma
14. " " " Lemons diploma
15. " " " Cranberries....diploma
16. " " " Strawberries .. 5.00
17. " " " Blackberries ..diploma
18. " " " Nuts.....diploma

CLASS III.—VEGETABLES.

1. Best and largest exhibit of Vegetables, (not less than 15 varieties.).... 15.00
2. Best collection of Irish Potatoes 5.00
3. Best collection of Sweet Potatoes..... 3.00
4. Best collection of Sugar Beets.. 5.00
5. " " " Squashes and Pumpkins..... 5.00
6. Best 6 Watermelons..... 3.00
7. Best 6 Muskmelons..... 3.00

CLASS IV.—MISCELLANEOUS.

1. Best collection of imported Seeds..... 10.00
2. Best collection of California Seeds..... 10.00
3. Best exhibit of Castor Oil beans 5.00
4. Best exhibit of Flax.....diploma
5. " " " Ramie plants and fibre..... "
6. Best exhibit of Hemp..... "
7. " " " Tea plants.... "
8. " " " Cal. Rice in ear "
9. " " " Hop vines..... "
10. " " " Tobacco leaf.. "
11. Best exhibit of California Coniferæ Cones, (not less than 15 varieties.)..... 5.00
12. Best exhibit of bouquet paper..diploma

SECOND WEEK.

CLASS I.—FLORAL DEPARTMENT.

1. Best collection of Fuchsias, in pots, (not less than 15 varieties.). 8.00
2. Best collection of Fuchsias, in pots, (not less than 6 varieties.).. 3.00
3. Best collection of double flowering Geraniums, in pots..... 5.00
4. Best collection of Tricolor Geraniums, in pots..... 5.00
5. Best collection of Zonale Geraniums..... 5.00
6. Best collection of Pelargoniums in pots..... 5.00
7 Best collection of Verbenas, (not less than 12 varieties)..... 3.00
8. Best collection of Pinks, Carnations and Picotees, in pots..... 5.00
9. Best collection of Pansies, in pots or boxes..... 3.00
10. Best collection of Double Petunias, in pots..... 3.00
11. Best collection of Annuals, in pots or boxes..... 5.00

CUT FLOWERS.

1. Best 20 Dahlias..... 3.00
2. " 10 " diploma
3. " 12 Gladiolus 3.00
4. " 6 " diploma
5. " 12 Spikes of Hollyhock.. 3.00
6. " 6 " " ...diploma
7. " 12 Roses..... 5.00
8. " 6 " diploma
9. " 12 Pansies 3.00
10. " 6 " diploma
11. " 12 Carnations 3.00
12. " 12 Picotees..... 3.00

CLASS II.—FRUITS.

1. Best exhibit of Tropical Fruits. 5.00
2. Best arranged two Baskets of Fruit..... 5.00
3. Best and largest collection of Foreign Grapes..... 20.00
4. Best 10 varieties of Wine Grapes 10.00
5. Best 6 varieties of Table Grapes 5.00
6. Best varieties of Raisin Grapes. diploma
7. Best 6 bunches of Grapes of any one variety.....diploma
8. Best exhibit of California Seedling Pears.....diploma
9. Best exhibit of California Seedling Apples.....diploma

THIRD WEEK.

BOUQUETS, BASQUETS, ETC.

1.	Best basket of flowers.....	5.00
2.	Best pyramid bouquet.....	3.00
3.	Best 2 round bouquets.....	3.00
4.	Best 2 table bouquets.....	3.00
5.	Best wedding bouquet.....	3.00
6.	Best funeral wreath and cross.	5.00
7.	Best flat bouquet.....	3.00
8.	Best 4 button-hole bouquets...	diploma

FOURTH WEEK

1.	Best collection of Variegated foliage plants, of tender nature..	10.00
2.	Best and most numerous exhibit of different styled bouquets and floral decorations, (not more than one of each style.....	10.00

Note I. Diplomas of the Society will be given instead of money if so desired by the exhibitor.

Note II. Exhibitors of Fruits and Vegetables, who wish to compete for premiums, are to exhibit not less than three specimens of each variety.

RULES AND REGULATIONS.

1.

The exhibition will continue for four weeks, commencing on Tuesday, August 8th, and closing on Saturday, September 9th.

Articles offered for competition according to premium-list for the First Week, must be entered on or before Saturday, August 5th, and delivered before 11 o'clock, on Tuesday, August 8th.

Articles for competition in the premium-list of the Second Week, must be entered on or before Saturday, August 12th, and delivered before 11 o'clock on Tuesday, August 15th.

Articles for competition in the premium-list of the Third Week, must be entered on or before Saturday, August 19th, and delivered before 11 o'clock on Tuesday, August 22d.

Articles for competition in the premium-list of the Fourth Week, must be entered on or before Saturday, August 26th, and delivered before 11 o'clock on Tuesday, August 29th.

2.

All articles must be properly named and entered in the name of the grower or owner.

3.

Exhibitors are requested to present to the Secretary a list of their contributions, and to state whether they are for competition or not.

4.

All articles for competition must have been produced by the exhibitor, or have been in his possession for at least three months.

5.

Competition for premiums is open to all, but a discount of one-third of the amount will be made from the Awards to persons who are not members of the Society.

6.

All articles received for exhibition will be entirely under the control of the Committee of Arrangements, who will give them their proper places and take all possible care to return them uninjured.

7.

No person or persons shall be entitled to receive more than one premium for the same specimen of plants, flowers, fruits, seeds, vegetables, etc. If any specimen has obtained a premium in a collection, it shall not be credited to the same person in another collection, nor as a single specimen, nor shall any premium be awarded to a single variety, which may be included in any of the collections.

8.

No article on exhibition will be entitled to a premium, unless it possesses points of superiority, and the judges are strictly required to withhold premiums, if in their opinion the articles exhibited do not merit them.

9.

Articles of a suitable character not mentioned in the premium-list, will be received,

and if thought deserving will be recommended for premiums.

10.

A premium will not be awarded when the article is not worthy, in case there is no competition.

11.

After the Judges have made their awards, the prize specimens will be labeled and cards with the names of exhibitors will then be placed on their articles.

12.

Articles for exhibition must be entered and staged by numbers, and no cards bearing the names of the exhibitor can be attached to them before the awards are made public.

13.

Dishes, glasses and vases for the display of fruits and flowers, will be furnished by the Society.

14.

All premiums that are not claimed within three months after the close of the exhibition, shall be forfeited to the Society.

15.

No article can be removed from the place of exhibition unless by permission of the Committee of Arrangements.

16.

The Judges will be required to base their decision upon a recognized standard, as far practicable, and their decision in all cases will be final.

17.

An Auction Sale may be held after the close of the exhibition for the disposal of such articles as the exhibitors may wish to sell.

APPOINTMENT OF JUDGES.

Each exhibitor will present in a sealed envelope to the Committee of Arrangements on the day of the opening of the exhibition, a list of three names which he desires to act as judges in the class where he is a competitor. No person can be judge and competitor in the same class. The three names receiving most votes will constitute the judges in that class.

In case the exhibitors neglect to elect judges, the President of the Horticultural Society will appoint them.

AWARDS.

The judges must hand in the awards in writing under sealed envelopes to the Secretary of the Society, on or before the third day of each exhibition, as defined in the premium list. The awards will be opened by the Committee of Arrangements, and announced on the following day by the President of the Society.

TRANSPORTATION OF ARTICLES FOR EXHIBITION.

Arrangements are being made with the diffent transportation companies to forward articles for exhibition free of charge.

H. N. BOLANDER,
PRESIDENT.

F. A. MILLER,
SECRETARY.

Office, 418 Kearny St.

San Francisco, April, 1871.

THE TIME TO DO IT.—This is the season in which to plant the seed of Western nut bearing trees. Our farmers and those of our citizens who own land but are not farmers, should take this matter under serious consideration. A trifling expense and less labor, would fill our valley with the choicest varieties of trees which would not only be splendid ornaments, but a source of good profit. They will all thrive well, and long avenues or large orchards of Walnut, Hickory, Butternut, Beech or Chesnut trees would add an immeasurable value to the property on which they are located.—*Daily Independent.*

MULBERRY TREES.—Parties have recently purchased several acres of land at San Leandro, for the purpose of setting out mulberry trees, in order to raise silk-worms.

EDITOR:
C. A. STIVERS, M. D.
ASSOCIATE EDITORS:
F. A. MILLER. C. STEPHENS.

Editorial Portfolio.

In looking through our Eastern exchanges, we are constantly impressed with the necessity for our people giving more serious attention to our Californian Agricultural and Horticultural papers and journals. The publications of this kind issued in the Eastern States, are, as a general rule, conducted with great ability, and contain much of interest to us all; but for practical guides they cannot be used on this coast.

The United States, stretching as it does from ocean to ocean, has a great diversity of climates, and a rule that can be applied in one section is utterly useless in another. This reasoning applies with greater force to California than to other portions of our common country. We not only have a widely different meteorological relation with the balance of the States, but even within the boundaries of our own State, a number of varying climates. Knowledge, then, to be of use to us, must be of us; having for its basis an actual experience in the things treated of.

No one will deny that the future wealth and prosperity of California, and in fact of the whole Pacific Coast, are dependent upon their agricultural interests. It is the proper development of that interest which is to give us a steady progression in prosperity.

Our friends in the East look upon this coast almost as the promised land—a land that overflows with the "milk and honey" of golden promises—and wonder at our own indifference to the great advantages that Nature has bestowed upon us. Possibly this indifference of ours is to be accounted for by the old proverb, that "Familiarity breeds contempt." While others, thousands of miles away, behold the bright vision of an almost earthly paradise, we who are at the very doors, nay, within the temple itself, see naught, and grope halting and stumbling in the dark.

The glitter of gold, and the charm of rapid made fortunes, have to a certain extent, unsettled us for sober, patient toil. But time works changes in commonwealths and communities as well as in individuals; changes that it is only wisdom on our part to understand and take advantage of. Gold is no longer the staple production of this State; grain and fruit have displaced our former monarch and now reign supreme. Development of the agricultural interests then, is the great work of the people on the Pacific Coast. It is not alone the farmer who is to do this work, but all classes must unite in furthering the object sought for.

There are now three publications in California devoted to the advancement of all that pertains to the cultivation of the soil. The *California Farmer*, *Pacific Rural Press* and our own journal; for the first two we have words of praise and consider them in all respects superior papers; as for ourself we let our columns speak. It is by supporting these journals and papers in a liberal manner, that all may do their share in sustaining and increasing the agricultural resources of the Pacific Coast. If it is praiseworthy to patronize home manufactures and home productions, it is certainly equally so in fostering those means by which these home products are increased and rendered valuable. We are not advocating an exclusiveness in regard to agricultural and horticultural literature, but rather that home journals ought to receive a larger share of home support than is at present accorded to them. Those published abroad will always contain many important items of agricultural knowledge which our farmers should by all means possess themselves of, but they cannot, as we have said, be anything like guides in actual work on this coast. In fact they have never assumed this, but on the other hand look to us for knowledge and information respecting this part of the world. Besides the good done in the bounds of the State itself, and among its own people, by the dissemination of facts in agriculture and horticulture, we are (or at least hope to be) instrumental in

inducing immigration, and thereby adding to the general wealth of the State. We ask in return that all interested in the future growth of the Pacific Coast, shall aid us in this work.

LIQUID MANURES.

Very little attention is paid in California to the manuring of pot-plants, and it seems that we are expecting rather too much of the small quantity of earth contained in a small pot; yet plants are grown for years in this manner, and little or nothing is done to assist them in the development of leaves and flowers. No one doubts the beneficial effect of the application of manure, but the additional labor is generally avoided. We appeal to our nurserymen and florists to give this matter more serious consideration, and recommend to their customers a system of manuring by liquids. It is not our purpose in this article to recommend certain kinds of manures for pot-plants, as almost any kind of manure used judiciously is better than none.

That proper judgment is necessary in manuring pot-plants is generally conceded, and also that the best time for applying manure is during the period when the growth of plants is most active, *i. e.* from the time the young wood is pushing forth, up to the forming of flower buds. During the time when flower buds are formed, we should cease to stimulate the growth of plants by application of manure, while we may give it again when the flower buds are about to expand.

The *Journal of the Farm* publishes the following from a correspondent:

"In many cases, in green-house culture, where the soil is generally limited to a pot or perhaps a large wooden vessel, there is a disposition to stimulate the growth of sickly plants by the direct application of guano, or other highly concentrated manures. The result very frequently is, that the remedy is worse than the disease. A distinguished writer on floriculture says: Only plants in perfect health are in a fit state to be benefited by manures; they may be growing slowly for the want of nutriment, and at the same time be perfectly healthy, with abundance of hungry roots. Such plants as have been for years in the same pot, as oranges, oleanders, camellias, &c., frequently will be amazingly benefited by applications of liquid manure during their season of growth. It is also of great service in green-house culture, especially for plants that are not rooted, and where it is not deemed expedient to change them into larger pots, and if liquid manures are applied to such plants as Pelargoniums, Cineraries, Primroses, &c., just as the flower buds are expanding, the flowers will be increased in size and brilliancy.

It is, however, to be borne in steady mind, that it is a dangerous experiment to make these liquid applications when flower buds are forming, as the growth of wood will be stimulated, and the flowering principle interfered with. Manurial liquids are beneficial only when applied when the growth is active. As already stated, they should be withheld during the period when the buds are forming, and sparingly used during the time of blossom expansion.

Another point to be remembered is, that liquid manures should be applied to plants in pots in a perfectly clear state. Most persons are under the impression that the solution should be thick or disturbed. This is an error.

I have found great advantage from keeping a large vessel filled with liquid manure from which I use the quantity required without disturbing the sediment, and I have had admirable results from a liquid manure made by dissovling super-phosphate."

The Agricultural Department at Washington.—We regret to see some parties in the East, advocating the abolishment of the Agricultural Department. The Department is one of the most important in the United States, and happily one of the best conducted, as far as we can judge. The movement for abolishment will prove a complete failure, we predict. The people want it and must have it, and we would consider an argument on this point waste of time.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

The seventh regular meeting of the Bay District Horticultural Society was held Saturday, March 25th, 1871, at the rooms of the Academy of Sciences, No. 622 Clay street, San Francisco.

Reports were received from the Secretary, the Committee on Exhibition, and the Committee on Premium List.

The following new members were elected: David Hudson, J. H. Leonard, F. L. A. Pioche, of San Francisco; Judge Thomas, of Santa Rosa; J. H. Gilmore, of Oakland; and Dr. B. C. Fredericks, of San Francisco.

The premium list for the next exhibition was adopted as reported by the Committee, after a few unimportant amendments. The list will be found in another column of this magazine. The Committee on Exhibition was granted full power to act.

A number of books for the library of the Society, and a package of seeds for distribution, were presented from the Agricultural Department at Washington.

On motion it was resolved to hold an adjourned meeting on the following Saturday, April 1st, for the transaction of pressing business.

At the adjourned meeting, April 1st, the Committee on Exhibition reported that they had completed an arrangement with the Mechanics' Institute, to hold the Horticultural Exhibition at the same time and place with the next Industrial Exhibition, which is to commence on August 8th, and will continue for four weeks at the Pavilion. The Mechanics' Institute agrees to furnish a building attached to the main building, forty-five feet wide and three hundred feet long, which is to be connected by three large doorways with the Pavilion; the Mechanics' Institute also furnishes gas and water, free of expense. The Horticultural Society has full control over the space occupied, and manages the exhibition by its own rules and regulations, which are also published in another column of this magazine.

The premium list, as will be seen, offers six hundred dollars in cash prizes, and we hope that nothing will remain undone to make the affair a success in every respect. It is the intention to so arrange the exhibition as to give it the appearance of a garden; grassplots, rockeries and other prominent features will be introduced.

A Committee of Arrangements was then appointed for the exhibition, which will do all in their power to conduct the affair properly and impartial.

It is supposed that much of the time of the Horticultural Society will be taken up with ordinary business, and the members have therefore concluded to hold a special meeting hereafter every second Saturday of each month, for the purpose of discussing horticultural matters. These meetings will be open to all, and we hope that many friends of the Society will avail themselves of the opportunity to hear what practical men think of horticulture.

A SUGGESTION.

The *California Farmer*, in speaking of the Horticultural Society of California, says:

"We would suggest to that Society, that an increase of interest for their Society and for the cultivation of Floral Gems would grow up in our community, if *Lady Members*, who are Amateur Florists were admitted, and all ladies who take an interest in these things, for they would promote these institutions, as is the case in the Horticultural Society of Massachusetts."

We appreciate the suggestion of the *Farmer* and cannot see why the ladies would not make very good and active members of the Society. We feel sure that such a step would help still further to promote the taste for floriculture on this coast.

SEEDS RECEIVED.—We have received from the Department of Agriculture, a quantity of Carter's Prize Nursery Sugar Beet Seeds, packages of which can be obtained at our office, free. It is a new and fine variety.

Poison Oak.—One of the most annoying and troublesome features in our suburban gardens and the picnic grounds, frequented by excursionists from San Francisco and elsewhere, is the Poison Oak. The beauty of its foliage, which represents a most striking appearance in autumn, is apt to attract the attention of visitors, who become victims of its poisonous qualities by cutting or even touching its branches. There are some peculiarities about this plant; some are effected easily, and we have many cases on record where persons have been poisoned by it in passing the plants without touching them, while others are handling it *ab libitum*, without it having the slightest effect upon them. The writer has had occasion to be among the Poison Oak for over fifteen years, and never has been effected by it, although handling it frequently, until some two years ago he was slightly effected, and ever since, he runs the risk of being poisoned whenever he comes near it, without touching. How is this to be explained?

We would suggest that owners of tracts of land, covered with Poison Oak, inaugurate experiments by which this troublesome pest could be destroyed effectively and without detriment to the operator. Parties owning or keeping picnic grounds would find it very much to their interest to look into this matter seriously, and we have not the least doubt that there is some way by which we might operate against it with some success. Is there any one who can suggest something worthy of a trial?

Catalogue Received.—We have received No. 6, of John Saul's (Washington, D. C.,) Descriptive Catalogue (including a fine chromo lithograph of two new varieties of Zonale Geraniums, "Lady Edith," and "Coleshill,") of new, rare, and beautiful plants for the spring trade, 1871. It is principally made up of Geraniums and Pelargoniums, which at present seem to be great floral favorites in the Eastern States. People in California have no idea to what perfection our friends in the East have arrived in the cultivation of these beautiful plants.

Decay of Orchard Trees in Oregon.—We are sorry to hear that in some localities of Oregon, orchard trees are suffering from decay, and so far we have not been informed of the probable cause. A correspondent of the *Willamette Farmer*, attributes the decay to "too much cultivation and pruning in the earlier stages of growth." We, for our part, cannot see it in that light. If there is anything wrong with our orchards in California, we are inclined to assign, as a direct cause, the "too little cultivation."

Another correspondent on this subject, says: "What matures early, dies early. Too heavy crops on young trees bring ruin to our orchards." The same correspondent says, that since he cultivates his orchard in clover, the trees do remarkably better.

Horticultural Fair.—As will be seen, by reference to the proceedings of the Bay District Horticultural Society of California, arrangements have been made between that Society and the Mechanics' Institute, whereby the First Annual Horticultural Fair will be held at the Pavilion during the Industrial Exposition. It is the intention of the Society to make this exhibition far superior to any of the kind ever held on this coast, and also to make it the grand feature of the entire exhibition.

We hope to see our horticulturists, florists, and amateurs in the floral art, well represented as exhibitors. It is not only to their pecuniary interest to take hold of this thing in a right, hearty manner, but it will be also beneficial to the State in general. We have for a number of years been writing, and talking about what we can do in this line, now let us make a practical showing of our productions, and the great advantages that California possesses.

Pennsylvania Horticultural Society.—At the monthly display of this Society, held February 21st, Robert Buist received the premium for the best collection of Camellias. Of Pears, the Duchesse de Bordeaux received the first premium, and of Apples, the Fallawalder, Smith's Cider, Cooper's Redling, Rawel's Janet and Pennock.

Editorial Gleanings.

The Fault of Town Gardening.—In our travels about the country we notice one glaring fault in all the town and village flower gardens, and that we can express by no more appropriate name than "legginess." Everything is run up and drawn up to its utmost, with the exception of those plants which do better when trained up, and they are left to branch from below at will. Let us take as two examples, the Pelargonium (Geranium) and Heliotrope, which are among the most common plants set out for garden decoration. The Geraniums, whether the Rose Geranium, grown for its fragrant leaves, or some of those prized for the brilliancy of their flowers, or the showiness of their variegated foliage, are often badly wintered plants, a tuft here and there of foliage set upon long, leggy branches, which never come into shapely plants. In plants like these, people seem to lack courage to *pinch*. There is nothing more tractable than a Pelargonium (Geranium) of any kind. A house-grown plant may be made a dense bush by pinching, and a bit of a plant received from the green-house in spring may be left to grow into a "leggy," shapeless thing, or may be made, by proper pinching, to assume a pleasing form. Many people who grow plants and love them, lack the courage to do that which will be for the plants' good. A neighbor of ours has a lot of plants, all at sixes and sevens, and though we almost daily advise the use of the knife, he lacks the courage or the faith to apply it. The Heliotrope, when put out, often becomes a nuisance. Some branches start out near the base and grow a long distance before they show signs for flowering. Keep the Heliotrope pinched in as to its lower branches, growing it as a little shrub, and it will give an abundance of flowers all summer. By proper attention to the plant in the boarders it may be kept in a good shape for potting for winter flowering, but as generally grown, it has a great number of long, weak branches at the base, and when it is potted in fall it is usually worthless. Timely care is the price of comely plants.—*American Agriculturist.*

Changes which the Colors of some Blossoms and Flowers Undergo when Exposed to Ammonia Gas.—Dr. Vogel relates at length, in a German publication, a series of experiments extended over no less than eighty-six species and varieties of flowers, and made with the view to learn how the colors thereof are affected by the action of ammonia gas, the flowers being exposed to that gas by being placed under a bell-jar filled with the gas, and left in that condition for from a quarter of an hour to two, or even twelve hours. Among the general results obtained, he found marked difference to exist between the action of the gas upon flowers, the coloring matter of which is fixed in small granules, and that which is present in solution; the former is far less changed than the latter. Among the eighty-six kinds submitted to research, twelve exhibited no change whatever; of these, seven were yellow, and five deep violet-colored. Deep violet-colored flowers are not at all affected, and some blue colors also stand the action of the gas for a time very well. The alteration produced by the gas is, in most cases, very akin to that called forth by the fading away of the flowers. The yellow coloring matter of the *Lotus corniculatus* exhibits a great stability, since it withstands the action of ammonia gas for twelve hours without change. On becoming dry, this coloring matter becomes bright green.

In reply to a query about a remedy for white worms in plant pots, a correspondent of the *New England Farmer* says that lime water will kill them, or a little slaked lime sprinkled on the surface of the earth and in the saucer of the pot. Lime water can be made easily by slaking a large piece of lime in a pail of cold water, letting it settle and then bottling for use. Give each pot a table-spoonful twice a week.

A writer in the *Plantation* states that he destroyed the insects which infested his cabbage and collords by applying kerosene oil with a common pepper box, making a pint suffice for a hundred plants.

Application of Manure.—The best application of manure is a subject which has been too much neglected by farmers generally, and while they are commended for applying all the manure within their reach, yet more profitable results would be realized if manure was applied more in consonance with the laws which govern the growth and nutrition of plants. Plants as a general rule do not require equal supplies of manure, which may be found out by the fact of their not all requiring the same length of time to mature a crop. The longer a plant is in the soil before it matures, the greater will be the exhaustion of the soil, and consequently will require better land and more manure to produce a good crop. Of this, winter wheat is an instance as compared with oats or other grain of short duration in the ground.

Pansies in Masses.—A correspondent of the *Gardeners' Chronicle*, says that no one who has not seen the effect of pansies in large masses, can have an idea of their beauty. He planted a border, 400 yards long and 24 feet wide, with pansies and cerastiums, with a single row of pyramidal Zonale Geraniums in pots at intervals of ten feet, and it was the admiration of all who saw it.

Sawdust for Cut-Worms.—A correspondent of the St. Louis *Journal of Agriculture*, has discovered that a handful of sawdust placed around the root of a plant will effectually protect it from cut-worms. His experimenting was on a pretty large scale, and in not a single instance was there a failure. He does not state what kind of wood the sawdust was from, but we suspect that it was pine, and that therein lies the secret of its efficacy.—*California Farmer.*

The Magnolia grows wonderfully rapid at the city of Sacramento, and blossoms there freely. At Governor Stanford's beautiful residence there are large Magnolias, also at the Garden of Gen. Reddington, and at C. Crockers, Esq. The Magnolia should be more extensively grown.—*Farmer.*

California oranges as large as a man's head are for sale in Washington.—*National Farmer:* We should like to ask the *Farmer* two questions. First, in what part of California were those oranges grown. Second, what is the size of the "head."—Ed.

Superior Table Mustard.—Take best flour of mustard, fresh parsley, chervil, celery, tarragon, each ¼oz., 6 salt anchovies—garlic, if liked—all well chopped and ground together, and grape juice and sugar to taste, with sufficient water to form the mass into a thinnish paste. When put into pots, a red-hot poker should be thrust into each after filling, and a little oil should afterwards be poured upon the surface.

Another.—Take black mustard seed, quickly dried until friable, and then finely powered, 1lb., salt 2 oz., tarragon vinegar to mix. Other mustards, may be prepared by employing differently flavored vinegars, or walnut or mushroom vinegar, or the liquors of sweet pickles.

CENTRAL PACIFIC RAILROAD.

Passenger Sunday excepted.	Express. Train Daily.	February 27, 1871.	Express Train Daily.	Passenger Sundays excepted.
4.00 P M	8.00 A M	San Francisco.....	5.45 P M	12.30 P M
4.42 "	8.40 "	Oakland.....	5.12 "	11.58 "
	7.30 "	San Jose.....	5.40 "	
7.58 "	12.10 P M	Stockton.....	1.46 "	8.35 "
9.35 P M	2.10 "	Sacramento.....	11.15 A M	7.00 A M
	4.10 "	Marysville.....	9.10 "	
	9.00 "	Sesma.....	4.20 A	
EASTWARD.	2.20 "	Sacramento.....	11.45 "	WESTWARD.
	5.25 "	Colfax.....	8.45 "	
	1.15 A M	Reno.....	1.00 A M	
	9.10 "	Winnemucca.....	4.05 "	
	12.00 M	Battle Mountain..	1.25 P M	
	4.10 "	Elko.....	8.45 A M	
	6.10 "	Ogden.....	5.15 PM	

OAKLAND BRANCH.—Leave San Francisco, B 6 50, 8 00, 9 10, D 10 20 and D 11 10, a. m. 12 00, 1 50, D 3 00, 4 00, 5 15, 6 45 and B 11 30 p. m.

Lv, Brooklyn, B 5 15, B 6 30, 7 40, 8 50 and 10 00 a. m., 1-30, 2 40, 4 55 and 6 25 p. m.

Lv. Oakland, B 5 25, B 6 40, 7 50, 9 00, 10 10, 11 00 and 11-50 a. m., 1 40, 2 50, 3 50, 5 05 and 6 35 p. m.

ALAMEDA BRANCH.—Leave San Francisco, B 7-20, E 9 00, BC 9 30 and EC 11 30 a. m., 1 30, 4 00 and 5 30 p. m.

Lv. Haywards, B 4 15, B 7 00, E 8 30, B 9 00 and E 11 00 a. m., and 3 25 p. m.

Lv. Alameda, B 5 15, B 7 36, E 9 06, B 9 36 and E 11 36 a. m., 1 35 and 4 05 p. m.

B Sundays excepted. E Sundays only.
D to Oakland only. C To Fruit Vale only.

T. H. GOODMAN, General Passenger and Ticket Agt. A. N. TOWNE, Gen'l Supt.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

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THE CACTUS.

It is somewhat remarkable that the Cactus family is so much neglected by the majority of our able writers on Horticulture; some of them merely mentioning a few of the leading varieties while others ignore the family entirely. No good reason can be assigned for this neglect, as their cultivation is comparatively easy, and the brilliancy of their flowers cannot be excelled.

In the East and in Europe the Cactus is treated as a hot-house plant, as there the least touch of frost will injure; here in California we have seen it under glass, in the window, and in the open ground, everywhere flowering freely, but our florists complain that there is no sale for the Cactus. For this we can assign several reasons:—First, the prevalent supposition and belief that the Cactus is a hot-house plant, and therefore requires too much protection and care;—Second, that they flower but once a year, and that, not till they have attained a certain age;—and, third, that the plant itself is not a particularly attractive one. But, if the public had the opportunity of seeing such specimens as we have seen lately when visiting an amateur friend of ours, who cultivates a large number of varieties, we believe they would offer even handsome prices to tempt him to part with them. We advise our readers to cultivate some of the varieties of the Cactus, but at the same time recommend a warm and well protected place if they have to be cultivated out of doors; the flowers will develop much larger and more brilliant in color under glass.

Before giving a description of some of the best varieties of this peculiar plant, which is a native of America, a few interesting facts may not be out of place.

In some portions of the continent, particularly in Mexico, the Cactus is planted for hedges. In San Domingo, a certain variety is used as war material for keeping cavalry and infantry from penetrating. For hedges the Cereus varieties are most extensively used. In South America, the dry trunks and branches of the Cereus are used as firewood. In Chile, this variety of Cactus grows large enough to serve as rafters for small buildings. The Cactus is found in extremely dry regions, where neither stream nor spring can be found, and here the instinct of animals prompts them to kick off the trunks of the Cactus and to suck the juice.

Many varieties of Cactus bear a fruit which is eaten and apparently well liked by the inhabitants.

Some of the Cacti have prickles from ten to twelve inches in length, and they are frequently used by the natives for knitting. It is also said that a piece of the Cereus, if thrown into impure water, will purify it. And who has not heard of the perfume of the Night-

blooming Cereus, which is sold at high prices by the dealers in perfumery.

The best soil for the cultivation of the Cactus, is a sandy loam mixed with small pieces of brick and lime; an application of guano dissolved in water, if used sparingly, will be very beneficial. As soon as the flowering season is over, it is best to keep them in the open air, and during that time it is well to water them once a day. In transplanting from smaller into larger pots, care should be taken not to cut or bruise the roots, as such injury may cause them to rot.

The propagation of the Cacti is mostly effected by cuttings, although some are raised from seeds. The cuttings should be kept in a dry place for several days before planting them, by which time they will cease to bleed; if set in the ground while fresh, they are apt to rot. In planting the cuttings they should not be inserted deeper than is sufficient to keep them steady, they will root more easily; after planting they should be placed under glass and watered only when dry.

The *Cacti* are subdivided into several classes, viz.:

1. The *Mammillaria.*—These are round and partially covered with small, wart-like offsets. There are fully fifty varieties of this class, and they are cultivated more for their peculiar shape and form, than for their flowers, which are small and appear to be set on the main trunk; the colors are rose, red, yellow and white.

2. *Melo-cactus*, (Melon-cactus.)—These are natives of the West Indies and Brazil, and resemble very much the form of a Melon. The flowers are small, make their appearance on the top of the plant, and are mostly of a rose color. There are about twenty varieties of this class known. The *Melo-cacti* are slow in growth, and require a higher temperature than the *Mammillaria.* They are propagated most successfully from seed, while the latter are raised from seed, offsets and from root-cuttings.

3. *Echino Cactus.*—These grow in the form of a round column, or entirely round, with connecting ribs. The flowers are large, and appear on the top of the plant; they are either red or yellow in color, and open in the forenoon during bright sunshine. This Cactus is propagated by offsets from the old plant. There are over fifty varieties.

4. *Cereus.*—This class furnishes some of the most brilliant and dazzling flowers obtained by the art of floriculture, and many of them are very fragrant. The plant produces branches which have from three to six angles. The best varieties are—*Cereus azureus*, *C. flagelliformis*, *C. grandifloris*, (Night-blooming Cereus,) the flowers of which open at night; they are from eight to ten inches in length, and are from six to eight inches in diameter. *C. speciosissimus*, the flowers of which remain open for several days.

5. *Epiphyllum*, (Leaf-cactus.)—These produce their flowers upon the leaves. They grow mostly on mossy trees in the dense forests of Brazil. They have no prickles; the flowers are red, and from two to three inches in length, and remain open for several days. The best varieties are *E. Ackermanii* and *E. truncatum;* the latter is the more extensively cultivated here. They propagate easily from cuttings, and require abundance of water while in a growing state.

PLANTS FOR THE DWELLING-HOUSE.

We are delighted to see so much appreciation of the beauties of nature as is evinced in the numerous efforts to raise and cultivate plants of every grade, among all classes of our citizens in every part of the city; whether in the drawing-room or the *salon* of the wealthy, the parlor or dining-room of the thrifty, the humbler apartment of the employé, or the poorer residence of the day-laborer; whether selected from the choice denizens of the greenhouse, or simply a plant of polyanthus or a pot of mignonette. It is with a desire to foster and assist this commendable refinement of taste, that we offer the following extract:

"The wealthy may enjoy rich sensations of pleasure drawn from the parterre and the conservatory, the man of science may increase

his store of knowledge under the healthful excitement of a botanical ramble, and the poorest cottager with a garden has his hour of rest while admiring his border of simple beauties; but the inhabitant of the dwelling-house, in the crowded city, has to seek Nature's treasures within its walls, and considering the few occasions in which he can derive assistance, he has in many instances shown an acute intelligence, and in many more an enthusiastic admiration, worthy of receiving every encouragement. I will not occupy your columns with long detailed lists of plants suitable for window culture, as so much depends upon the care and attention which they receive. To the beginner I recommend evergreen shrubs of a bushy, free growing habit. It is of some importance to one whose patience in plant culture has not been perfected, to have something at all times to look at, and which will stand a little extra care and fondling without material injury. When further initiated, climbers may be supplied, and there is no class of plants more worthy of attention. Imagine the parlor dressed out for the summer season, and having the borders of the windows fringed with growing vines, the pots or boxes ornamented with a housewife's taste—it is a feast that will stand repetition. Creepers and trailing plants for basket decoration are indispensable, and the flower-basket may yet be a common luxury for the rich, as well as a constant grateful companion to the lonely one in a single room. Here the variety and growth are more than sufficient for every requirement; colors of all grades stand ready to the eye; shapes the most fantastic, simple, and pleasing; habits suitable for the noonday sun, or for the cold, cheerless aspect of a sunless exposure, and many of them are of very simple culture.

I have seen it stated that there are varieties of the Fern that will stand the dry air of the living-room. I have not found this to be the case for any length of time. A Fern case is a necessity in their culture, and this case may be anything from an eight inch shallow flower-pot, with a glass globe, to a square box of wood and glass the full width of the window, and say eighteen inches deep at the back, and twelve deep in front. The bottom of all such boxes must be protected from water drips, by having a lining of light lead over it, and rising two inches in depth all round the sides, and with a plug in the center, or at one corner, to let off superfluous water. It will be ready when painted, etc., for the bottom covering, which should consist of very fine gravel, about half an inch deep. Cocoa-nut fiber, saw-dust, and fine sand are all bad, holding, as they do, water in excess, and not admitting that free circulation of the air which even here must go on if health is to be secured to the inmates. Perhaps, for a small Fern case, the best thing I can do is to describe one occupying the center of a window in a room where a fire is seldom lighted, and at a house where I am a constant visitor. The box is octagonal in shape, twelve inches high, and two feet in diameter; the roof is hipped, and is also octagonal in form, and from the top to the bottom, perpendicular, is nearly two feet. This case has a pillar to stand upon, and upon which it is made to revolve at pleasure, and is a not unhandsome piece of furniture. On planting it, about an inch and a-half of square blocks of cork were placed at the bottom, and on this one inch of fibrous peat. *Trichomanes radicans* was planted as an edging all round, then about two inches more soil and cork were put on, and the center was planted with *Adiantum Ghiesbreghtii*. The sides were made good with small pieces of limestone, and the whole well watered with a fine rose. On cold nights the owner covers his treasures with a double blanket, and this is all the protection and nearly all the care required in a room facing the north. Again, wishing to possess a good specimen of *Hymenophillum Tunbridgense* for my room, I shaped a piece of rough cork the exact size of the pan in which the plant was to grow; this was rubbed well all over with damp (not wet) peat earth, upon this was laid small sprigs of *Hymenophyllum* with regularity, a little fine peat and sand was then sifted through the fingers over the root portion of the stem, a few small pieces of limestone were placed

here and there over the surface. The whole was well watered through a fine rose, and covered with a bell-glass and left in the corner of a light, airy room. In about six months the pan was one mass, presenting such a specimen as is seldom met with. These are simple instances of what may be done with this class of plants.

For a large case, and to an advanced cultivator, I can recommend the following, as some of Nature's choicest gems:—*Hymenophyllum demissum*, *H. caudiculatum*, *Trichomanes maximum*, *T. pyxidiferum*, *T. reniforme*, *T. Luschnathianum*, *T. anceps*, and to these add *Todea superba* and *pellucida*. There are many others, but these, to my own knowledge, will grow well in a case if the following directions are secured. No direct light should at any time fall upon them, a covering of some light material being always kept at hand; a very dry air should be guarded against, and the box kept closed. In warm summer weather the box lid may be tilted several inches, and the plants watered overhead with a fine rose every morning. At other times be content with damping well the sides of the pots and bottom of the box. Neglect not the blanket covering in the cold winter nights. Put in peat and sand and a sprinkling of bruised limestone, and do not allow these delicate plants to be more than one year without a careful shift. Plants suitable for a window basket should not, in my opinion, be of that rambling character which is sometimes insisted upon. A good, handsome basket may be planted thus:—Round the sides *Campanula Celsii*, round the edge *Alyssum saxatile compactum*, and for a centre a nice plant of *Agapanthus umbellatus;* another may consist of a good plant of *Swainsona Ferrandii*, and a few specimens of *Nierembergia gracilis* round the edges, and mixing with the foliage of the *Swainsona*. When nicely grown, this basket is fit for any drawing-room. A really good plant of *Echeveria metallica* for the centre, and an edging of *Sedum Sieboldii* also has a handsome appearance. The *Nasturtium* has been recommended for the vase and basket, but I have always found it to appear as tattered rags on a windy day. *Cobœa scandens*, the *Maurandyas*, etc., however excellent for a lofty conservatory, are not likely to give satisfaction in a dwelling house; rather would I advise some varieties of *Verbenas*, *Ivy-leaved Pelargoniums*, *Petunias*, *Cerastium*, etc. To plant a basket as it ought to be done, requires a little more ingenuity than potting a plant. If of wire, the sides must be previously well lined with Moss, well steeped in boiling water, to destroy the eggs of insects, and whatever vegetable life there may be left in it. Then commence by laying a little Moss compactly on the bottom, build up the sides of the basket with Moss, and plant promiscuously but with regularity as you go on, in layers of soil introduced inside the Moss; when well up plant the centre, and finish the top by covering the surface, pegging all neatly to its place, and remove any rough points with scissors. The principal cause of failure in basket cultivation is want of attention to watering, and the not supplying that amount of moisture which is necessary for a healthy development. If these are at all times attended to, there is nothing in the basket more than in the common flower-pot to cause failure. Water with care and attention, use a fine rose, letting the water fall gently and evenly, and give time for absorption. Frequently during the summer season steep the whole Moss overhead for a short time, and hang in a temporary place to drip before taking it to the usual place.—*John Richardson.*"

Poisonous Molds.—Molded bread, meat, cheese, or any other eatable, is an actual poison, whether inhaled or eaten. One kind of mold causes the fatal ship-fever. The mold in damp cellars causes various grades of typhoid fever, diarrhœa, dysentery, etc. Recent chemical researches and microscopic observations seem to show that miasm is nothing more nor less than a mold, and that this mold is, in reality, a cloud of living things, each too small to be seen by the naked eye, and are drawn into the lungs, swallowed with the saliva, incorporated with the food eaten, and by being absorbed into the blood are sufficient to cause all grades of deadly fevers. Elevated or dry localities are wholly exempt.

THE YUCCA.

But very few gardens contain a specimen of this well deserving class of plants, and we hope to encourage their cultivation by publishing the following from the New York *Horticulturist:*

"Yuccas are, as yet, a great novelty in all our gardens. We doubt if over one in a thousand who keep flower gardens, have yet seen or thought of growing one of these charming, yet exquisite flowering plants. The *Yucca filamentosa*, is one of the best for general use. Fuller describes it as follows: Leaves evergreen, long and rather stiff, spreading occasionally, slightly recurved. Flowers usually pure white, but in some specimens slightly tinged with greenish yellow. They also vary in size from one to two inches long, and are nearly as broad. Flower-stem four to eight feet high, branching, carrying several hundred blooms, each of which is succeeded by a large, six-celled pod, filled with smooth, flat, dark-colored seeds. After the plant blooms, the centre of the crown dies, numerous suckers spring up from below, and these will bloom as soon as they are large and strong enough, which is usually in two or three years; but if taken off and planted separately, they will bloom the second season. The seeds grow very readily if planted in autumn or early spring, and are transplanted at the end of the first season. Seedlings usually bloom when three years old."

We would add to the above variety the *Yucca gloriosa*, which is a native of the Carolinas and Florida, growing near the Ocean. The flower-stalk grows about four feet high, with white, bell-shaped flowers, striped with red on the outside.

We have several varieties of the Yucca growing in the southern counties of California, and perfectly hardy with us; they are the *Yucca previfolia*, *Y. Wiblii* and *Y. baccata*. They are all well worthy of being cultivated.

The *Yucca baccata* is well worth cultivating; its flower-stalk grows to the height of seven or eight feet, with tulip-shaped flowers which are very fragrant. When they are in bloom the store-keepers and tavern-keepers of that part of the country, bring their flower-stalks into their stores and houses, and for months they perfume the premises with a scent similar to that of the Magnolia.

A kind of liquor is also made out of it, which is very agreeable.

We expect to receive a full grown flower-stalk, as soon as they are in bloom, and we shall probably give a representation of it in the Magazine.

POPULAR BOTANY.

CHAPTER VII.

The first step in the evolution of a plant, is the development of a leaf, out of which, and by whose means, the stem is really brought into existence. It is in the blade of a leaf that the woody fibre is first formed, and from whence it passes downwards into the first joint of the stem, and so to the roots. As the leaves are produced, the internodes of the stem are increased, both in length and diameter, by the addition of woody fibre; all passing from their points of development downward into the roots of the plant, thus serving as the channel ways for the conveyance of the sap to, and from the rootlets beneath, and the leaves above.

By means of the leaves, the green surface of a plant is increased to an almost unlimited extent, and the largest possible amount of *chlorophylle* exposed to the action of the light and air. It is in the leaf that the crude sap is digested, and rendered fit to sustain vegetable life, and therefore this little organ will command a large share of our attention.

If we take the stem as the initial point, the leaf is then but an expansion of its bark, or better still, but a portion of the green covering pushed outwards and expanded laterally into thin lamina, through which, run ribs and veins formed of woody fibre, and which are connected with the liber or inner bark and the wood. The leaf, like the stem, is made up of two parts,—the cellular and woody; the green portion being composed

of cells; the ribs and veins (which are aptly called the skeleton) embracing the woody. The fibrous portion in the leaves performs the same office that it does in the stem, that of conveying and distributing the sap. In addition, it also supports and strengthens the cellular portion which otherwise would be continually destroyed. The cellular part of a leaf is made up of a vast number of cells arranged in a certain order, they varying in that order according to their position. In most cases leaves are so arranged as to present one surface to the ground, and the other upwards to the sky, and so we find that there are two distinct dispositions of cells in each leaf. Those of the upper surface are oblong and placed end to end in compact layers, with their long diameters perpendicular to it; while the lower surface consists of cells loosely arranged, and leaving a large number of spaces between them; the oblong cells having their long diameter parallel with the surface.

This arrangement of the cells, we at once see, is one of those beautiful means by which Nature protects herself and her work. The upper surface, which is exposed to the influence of the atmosphere and strong sunlight, is able by its compacted cells to resist a too rapid evaporation, while the under part of the leaf, from its loose texture, the more readily absorbs the necessary amount of light and air. To allow of the required amount of evaporation, leaves are provided with *stomata* or *breathing-pores*, which are situated in the membrane of the leaf, and consist of a number of holes, or slits. When the plant contains a great amount of moisture, these cells elongate and curve outwards in their center, thus allowing a free communication between the surrounding air and the inside of the leaf; but so soon as the supply of sap from the roots is lessened, these cells shrink down and so the orifice is closed. These *stomata* are found in large numbers, upwards of 100,000 of them have been counted in the space of a square inch. The largest of them are about one-five-hundredth of an inch in length.

The outward form of leaves varies to a great extent, and it is upon this variation that a part of systematic Botany is founded. In most cases leaves are thrown out from an unexpanded part or leaf-stalk, called a *petiole*, but in others the leaf expands directly from the stem, and then it is said to be *sessile*. That portion of the leaf near the stem is called its base, and the further point, the apex. If the leaf blade consists of one piece, it is termed single; when it is composed of two or more parts, or small blades, (that is, when the petiole is branched,) the leaf is then called compound.

The veins of a leaf are called its *venation*, and this venation is formed on two general plans. First the vessels of the petiole divide when they enter the blade, into a number of parallel veins, which pass at once to the apex of the leaf, being connected with each other by transverse veinlets; and in the second the petiole passes at once to the apex, giving off branches on both sides; these smaller ones finally uniting with each other, and so forming a general net work throughout the leaf. In the former case the leaves are said to be *parallel veined;* and in the latter reticulated, or *netted veined*. Endogenous plants have parallel veined leaves; while the Exogenous are characterized by the reticulated.

In the *Cryptogamia*, or flowerless plants, the leaves are forked-veined; the veins dividing and subdividing by forked division, which do not unite again.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION VII.

In our last number we were sorry to see an error under this heading. On page 166, second column, where speaking of the width of walks, the printer has made us recommend *three* feet instead of *five* feet. We object very much to narrow walks, and the figure 3—placed there by mistake—caused us considerable annoyance.

Having now given to the readers of this Magazine such information regarding the

preparation of soil; the laying out of beds and walks; the selecting and arranging of trees, shrubs and plants; the materials for walks, etc., as will assist them in making a garden: it is fitting now to say a few words about the edgings or borders for beds; although we are not prepared to state positively which is the best material for borders, yet we will make a few suggestions which may be of some service. Borders for beds should serve not only as a protection for them, but also as an ornament; and it is therefore important that they should be neat and appropriate. The material most frequently used with us is half-inch boards: these, if the right kind is used, will bend in a perfectly easy and graceful manner into any curves that may be desired. The cost of labor and material for putting them down is very trifling. Although we can not speak of wood as a border with much favor, we are hardly prepared to say what is better. For grassplots, borders are out of place, but we are in the habit of using half-inch boards as guides to protect the edges of the plot, until the sod has well rooted, when we remove the guides.

One of the very best materials for borders, is the old-fashioned Box, but we are very doubtful of the practicability and desirability of using it in California. Box requires more moisture than our flower-beds are in the habit of receiving, and in artificial irrigation the borders are very frequently neglected, and we have also good reason to believe that that frequent and close trimming which is necessary to ensure neatness and uniformity, is injurious to Box in this climate. However, it may be said that this plant has not been used in sufficient quantity for borders, to establish its practicability or impracticability for that purpose with us, and it is therefore advisable to give it further and more extensive trial. We have frequently noticed beautiful specimens of Box grown in Sacramento and at San José, but we do not know anything about the peculiarities of soil, etc., in which it was thriving.

Various kinds of Sedum have been used very effectively for borders, and we think that if properly trimmed and kept in good shape, it is even preferable to Box, on account of its cheapness and easy culture.

We must bear in mind that in the East and in Europe the beds are raised considerably above the walks, and that the borders there beside protecting the beds and serving as ornaments, serve to keep the soil in its place. Box fully answers this purpose, while the Sedum does not. Here, where the soil does not require drainage, the beds are almost on a level with the walks, and therefore ornament and protection to the beds are the only points required.

A very neat border can be made of Oxalis; the large rose-colored flowers are springing up continually. The plants do not grow very compactly, and therefore the outlines cannot be kept very well defined, which is most desirable in a border; however, this deficiency is fully made up by its beautiful and numerous flowers. Violets, Daisies, and certain varieties of Pinks are also used very advantageously, but care must be taken to keep the border well defined and compact, which requires a great deal of labor. The small-leaved Periwinkle is also very useful for the same purpose, with many others too numerous to mention.

It is our intention to give this border question more particular attention hereafter, and it will be very desirable to hear something from our nurserymen and gardeners on this subject.

With this we conclude our remarks on the laying out of fourth-rate gardens, adding a few words in reference to the proper care such gardens should receive.

First of all, the walks should be kept clean, and no weeds should be permitted to grow over them.

Secondly: The plants should be well watered at least twice each week during the dry season, and the soil should be well stirred around them as often as time will permit; frequent watering will make the surface hard and compact, and therefore frequent loosening of the soil is very essential to the plants.

Thirdly: Manage to cultivate your plants

bushy, and do not allow them to run up spindling and in awkward shape; clip or pinch off the ends of long shoots, so as to cause the plants to throw out additional branches and a more compact growth.

Fourthly: Cut away all decayed flowers and leaves, and manage to keep every thing clear of rubbish.

Fifthly: If a grassplot has been formed, carefully pull out all weeds while the grass is making its appearance, as it is only in this manner that a uniform growth of good sod can be obtained.

In conclusion, we add a list of such Annuals and Biennials as may be successfully grown, and are well worthy of a trial.

Ageratum.
Agrostemma.
Amarantus.
Aster.
Campanula.
Candytuft.
Canterbury-bell.
Coreopsis.
Delphinium, (Larkspur.)
Dianthus.
Gypsophilla.
Helichrysum.
Iberis.
Iceplant.
Ipomœa, (climbing.)
Lathyrus, (Sweet Pea.)
Linum-grandiflorum.
Lobelia.
Lophospermum, (climbing.)
Marygold, (Tagetes.)
Mesembryanthemum.
Mignonette.
Mirabilis Jalapa, (Marvel of Peru.)
Nasturtium.
Nemophila.
Oxalis-rosea.
Pansies.
Petunia.
Phlox Drummondii.
Portulacca.
Salvia.
Sanvitalia.
Scabiosa.
Stevia.
Stocks.
Viscaria-occulata.
Wall-flower.
Xeranthemum, (Immortel.)
Zinnia.

PROPAGATING AZALEAS.

The propagation and growth of this handsome class of plants, has heretofore met with but little success in this city. It is not easy to explain why this is so, as we have two or three varieties which are indigenous to this State; and, strange to say, these same varieties, when subjected to cultivation, turn out as unfortunately as those imported. True, we have seen a number of plants thriving well and blooming freely, in this city, the most noteworthy of which are at Woodward's Gardens, under the care of Mr. Schuman. But the finest plant which we have ever seen in this city, (and now in bloom,) is in the possession of Mr. Biebend, an amateur gardener, at North Beach. However, as we have said before, the success with these plants is only to a limited extent.

It would be well for our nurserymen to look into this matter, and endeavor to ascertain the best mode adapted to their cultivation in this State. Wishing to throw all the light possible upon this subject, we publish the following article of A. H. Pearson, in the *Gardener's Chronicle*, of London, as to the method adopted in Belgium. Of course, we do not say that all of it could be applied to their cultivation in this State, but we think it offers many points of interest in the treatment of a plant, which at present (with us) has no decided rule of culture:—"My experience in the culture of Azaleas has been principally in Belgium, a country which is considered by most people to be in a flourishing condition as regards Horticulture. The Belgians have almost entirely given up the system of propagating Azaleas by cuttings, saying that it is at best a faulty one, as they require so much smothering under bell-glasses, during which process many of them damp off, added to which many of the former varieties have not the stamina to produce free-growing plants; therefore, instead of cuttings they propagate almost exclusively by grafts. The stocks employed are raised from seed (collected from the most vigorous varieties), which is sown in

pans filled with fine leaf-mould, mixed with a little white sand. The seedlings are pricked out into fresh pans as soon as they are well up, with nicely developed cotyledons, care being taken to avoid breaking the roots; they are subsequently repricked two or three times, till they are large enough to be potted separately. The manner of grafting employed for the Azalea is the cleft graft, or, as the French call it, *greffe en fente*. The strongest stocks are grafted in the month of August, the graft being placed on the new wood, and take with great facility; the weaker ones are grafted some weeks later, on the last year's growth. After grafting they are placed under lights in a warm house, the pots being plunged in a slanting position, with the graft uppermost, or towards the light. When they are well taken the wrapping is undone, and the plants are staked, to prevent the grafts breaking out: straightening is generally needless, as the seedlings grow as upright as possible. The second year after grafting, the plants are put out into beds on the approach of summer; these beds are formed by the earth being taken out to the depth of ten or twelve inches, and the sides enclosed by an edging of boards; they are filled with well decomposed leaf-mould, into which the plants are plunged, *sans* pots. To protect them from the excessive heat of summer, and also from early frosts, they are shaded by boards made into squares about the size of ordinary frame lights, and supported by a simple inch rail running round the bed, and sustained at intervals by props. During the autumn many of the best plants are sold and packed off with the balls of earth just as they are, and the remainder are taken up and potted for the winter. This is the manner in which I have seen them cultivated for sale, and I think the system has many advantages, amongst which are obviously these: that you get more vigorous plants, in a shorter time, and generally longer lived ones, than those grown from cuttings; added to which you may flower your seedlings before grafting them, and thus have the chance of raising new and sometimes very valuable varieties. Amongst the seedlings shown last year at the Brussels exhibition were many which will greatly enrich our collection of these beautiful plants.

A. H. Pearson, Chilwell.

THE CAMPHOR TREE OF SUMATRA.

Among the most luxuriant and valuable trees on the island of Sumatra, the first belongs to the *Dryobalanops camphora*. The tree is straight, extraordinary tall, and has a gigantic crown, which overtops the other woody giants by one hundred feet or so. The stem is sometimes twenty feet thick. According to the natives, there are three kinds of camphor tree, which they name 'mailenguan,' 'marbin tungan,' and 'marbin targan,' from the outward color of the bark, which is sometimes yellow, sometimes black, and often red. The bark is round and grooved, and is often overgrown with moss. The leaves are of a dark green, oblong-oval in shape, and pointed. The outward form of the fruit is very like that of the acorn; the flower has five round petals, these are placed somewhat apart from each other, and the whole form much resembles a lily. The fruit is also impregnated with camphor, and is eaten by the natives when it is well ripened and fresh.

The amazing height of the tree hinders the regular gathering, but when the tree yields its fruit, which takes place in March, April, and May, the population go out to collect it, which they speedily effect, as, if the fruit be allowed to remain four days on the ground, it sends forth a root about the length of a finger, and becomes unfit to be eaten. Among other things, the fruit prepared with sugar furnishes a tasty comfit or article of confectionery. It is said that it is very unhealthy to remain near the camphor tree during the flowering season, because of the extraordinary hot exhalations from it during that period. The greater the age of the tree, the more camphor it contains. Usually the order of the Rajah is given for a number of men, say thirty, to gather camphor in the bush belonging to territory which he claims.

The men appointed then seek for a place where many trees grow together: there they construct rude huts. The tree is cut down just above the roots, after which it is divided into small pieces, and these are afterward split, whereupon the camphor, which is found in hollows and crevices within the body of the tree, and, above all, in the knots and swellings of branches from the trunk, becomes visible in the form of granules or grains.

The quantity of camphor yielded by a single tree seldom amounts to more than half a pound, and if we take into account the great and long continued labor requisite in gathering it, we have the natural reply to the question why it fetches so high a price. At the same time the camphor is gathered, that is, during the cutting down of the tree, the oil which then drips from the cuttings is caught in considerable quantity. It is seldom brought to market, because, probably the price, considering the trouble of carriage, is not sufficiently remunerative.

When the oil is offered for sale at Baros, the usual price is one guilder for an ordinary quart wine bottle full. The production of Baros camphor lessens yearly, and the profitable operations of former times, say the year 1853, when fully one thousand two hundred and fifty pounds were sent from Padang to Batavia, will never return.

Since time out of mind, the beautiful clumps and clusters of camphor trees have been destroyed in a ruthless manner. Young and old have been felled, and as no planting or means of renewal has taken place, but the growth of the trees has been left to nature, it is not improbable that this noble species will ere long wholly disappear from Sumatra.

National Farmer.

Parks.—The Central Park of New York contains, in round numbers, 850 acres, and has cost ten millions of dollars; but the increased value of property around this Park yields a tax which more than pays the interest on the outlay. Five million persons visit the Park every year. The Prospect Park of Brooklyn contains 578 acres, and has cost already seven millions of dollars.

OUR CITY PARK.

The *Industrial Reformer* publishes the following from a correspondent:

"It is somewhat singular that capitalists do not invest in City Park Bonds. San Francisco, like other cities in the East, having grown rich and large, needs a Public Park. It was a wise and healthy act for the Legislature at the last session to pass a bill for this purpose. Seeing that the lungs of the city expanded to such a degree, they felt that it was of the greatest importance.

Now that the land has been reserved for a Park, let us encourage the Commissioners by reminding the wealthy that six per cent. per annum ought to be a good investment. Hundreds of acres have been given by a citizen of St. Louis, and eighty-three acres by a citizen of Philadelphia has been donated to that city, to be forever kept for Park purposes. These had been already adorned with botanical gardens, trees, drives, etc., making the gifts still more valuable. We would like to see the same spirit animating the rich men of San Francisco.

Our intended Park possesses many natural advantages on account of its altitude, peculiar position and beautiful surroundings. How many, then, would like to see these attractive pleasure grounds at once begun? The people would commence to press out of the dusty streets in search of health and recreation, and soon build up cozy villages in the suburbs. It will conduce to the beauty and comfort of San Francisco; magnificent buildings will crowd its borders, while Science, Art and Industry will make it grand and attractive.

The blessings and pleasures that will ensue should not be so long delayed; every citizen should take a pride and interest in the great work.

Here the Poet will love to linger, and dash off his stirring lyrics, and the Prose Writer will weave the interesting thread of romance. The Artist will find a haunt for out-door studies. And here, too, will be the resort for picnics and pleasure parties, for nowhere else

within our city will they find a place of such artistic beauty and quiet retirement. Here, the voices of women and children will ring with mirth and hilarity; and here, too, will be inviting drives, shady walks and quiet nooks, carpeted with soft mosses and odorous with the fragrance of flowers."

We concur fully in the view of the correspondent of the *Reformer*, and cannot account for this lack of public spirit among our wealthy citizens. In our opinion there is a want of the "go-ahead spirit" in our Commissioners, or else they might have agitated this matter sufficiently to have induced our capitalists to invest in the Park bonds. We see no other way to have this great and much needed work commenced in earnest, than by the efforts of our citizens in general, and the sooner public meetings are called together for the purpose of discussing the necessity and practicability of the work, the better. Unless this is done before our next Legislature meets, we fear that certain interests will be brought to bear upon our law-makers, which may favor some new scheme.

It is generally understood that a much better locality could have been found for a City Park than the present site. Much less territory, more centrally situated, would have answered all purposes for the present and the coming generation. The half of the reservation which lies nearer to the city, is much better adapted for park purposes than the other half lying nearer to the Ocean; but our legislators cared very little, and most probably knew very little about the actual condition of the Park grounds. It is the citizens of San Francisco who should have something to say about their future Park, and if our former Board of Supervisors had no regard for our interests, and if the Legislature has done a wrong, either intentional or out of ignorance, it is for our citizens to express their wishes in the matter and have the error rectified. But, unfortunately, no one steps forward to agitate the matter, and the people have no opportunity of expressing their views on the subject.

It seems to us that the Commissioners themselves could have done something in this direction, and we are satisfied that if the citizens in general were to sanction the undertaking in public meetings, capitalists would come forward with their money to enable the Commissioners to go ahead. But all this would impose some little labor upon the Commissioners, and perhaps they do not care to subject themselves to these little annoyances.

So far no one seems to be benefited by this Park scheme except the Secretary of the Commissioners, who, we suppose, draws his salary as usual whether anything is done or not.

But there are some other difficulties: some one wants a Park located near the Presidio, and the Board of Supervisors passed a resolution favoring the acquisition of a part of the Presidio Reservation for Park purposes. The locality certainly is much better as far as soil and aspect are concerned, but a serious objection is, that, like the western part of the Park Reservation, it is not central. But what does all this mean? Are we to have two Parks? It would be well enough to have them, but it is certain San Francisco can not afford them both.

We would earnestly suggest the necessity for calling a public meeting and bringing this matter before it for the purpose of having it fairly discussed. Experts, practical men, should then be appointed to examine the respective localities and to report on the practicability of a Park on the proposed site, and such committee of experts should also be instructed to express their views as to any other locality which they may consider better adapted for Park purposes. And when our citizens have by these means arrived at the conclusion, which is the best locality for a Park, then is the time to apply to the Legislature to pass an act for the creating of a Park in accordance with the popular will of our citizens.

We are certain that the money will then be readily forthcoming, and we may expect to have a Park worthy of our young and aspiring city.

We have a number of organizations here which might take this matter in hand, such as our Chamber of Commerce, the Board of Supervisors, our Horticultural Society, the Park Commissioners, or some other public-spirited organization; and if the press of San Francisco will only consent to give their influence, we may surely expect a good result.

A SUGGESTION.

San Francisco, May 6th, 1871.

Friend Editor:—I have been a constant reader of your valuable Journal since it first made its appearance, in November last. With pleasure I hailed a paper which was to supply a want long felt, I believe, by the public in general, but by the amateur gardener, like myself, in particular.

I am greatly indebted to you for "Small Talk on Flowers;" for such articles as you have given us on the Pansy, Rose, Fuchsia, and others, as they have afforded me instruction and such knowledge as I lacked. I have read and re-read many other articles, such as those on the "Coniferæ of California," the "Sorgo," etc., which, however, I might term of no direct benefit to me, not being in the position to utilize them, except so far as general knowledge goes. These latter are heavy, learned articles, well handled and profoundly written, no doubt, but they do not offer exactly such matter for which I and many more like myself (as amateur gardeners) are wont to look after.

Excuse me, if I have already taken up too much of your time and space by making such a long exordium, but I thought it a necessary introduction to the object of my letter.

As I said above, your "Small Talk on Flowers" has given me a great deal of instruction. Allow me to submit to your consideration the following suggestion, which, if adopted by you in your known ability and acknowledged willingness, would constitute a regular school for the thousands of people who own a small yard or garden plot, which they would take pleasure to improve and embellish, if they had the knowledge of *how* to treat and propagate their own plants. But being without such elementary learning, and perhaps not having such superfluous means, as are necessary to remunerate the gardener for replenishing his stock year after year, they possibly set out some plants the first season, but after that permit everything to grow in a straggling manner, until, in three or four years, it looks neglected and almost like a place deserted.

My suggestion is, that you give us a few articles on "How and When to Propagate the Different Flowers and Shrubs;" for instance, how and in what month, the Rose, Pink, Geranium, Daisy, Pansy, etc., illustrating the same by an occasional wood-cut, if possible. The latter sometimes shows it much more intelligibly than any amount of words. Teach us like beginners, who have to learn the first principles; dont "suppose" we know already this or that—which editors very often do—and thus build up an education on a very poor foundation.

I would further suggest to you to open a regular calendar, or better call it a "Manual for Amateur Gardeners," which from month to month would tell us what to do and how to act in our gardens. It should tell us: what seeds of annuals to sow in the coming month, also which plants or flowers can then be propagated and transplanted; what bulbous plants to put into the ground, or when to take them out; when to commence pruning or trimming, and when to think of manuring the soil; and, further, how to shield our pets, and which of them more carefully, against the rigor of our rainy season, which in December and January, may well be called our winter from the severe frosts we then have.

I hope you will approve of my "Manual," which, if properly and regularly written up, will make your Magazine a most welcome guest to many families. You will act the teacher, giving us our exercises, and we the scholars. By attending then strictly to your advice and instruction, the best of your pupils will obtain such a premium as will amply

reward them, viz., a blooming garden filled with the choicest flowers and shrubs, in fact a small paradise of their own creation.

Yours, truly,

R. W.

PRUNING WITH REFERENCE TO FRUIT PRODUCTION.

BY MR. WILLIAM SAUNDERS.

Read before the Pennsylvania Fruit Growers' Society, January 20th, 1870.

Natural laws are constant and unvaried in their operations. Our knowledge of these laws is derived from accurate observations of causes and effects. Science is the systematized explanation of these observations. The science of pruning fruit trees is, therefore, the explanation or concentrated evidence of effects produced by manipulation on the branches and other portions of plants, derived from the accumulated knowledge of centuries of observation and experience; and when we consider the lengthened period, during which pruning has been performed—the general intelligence of the operators, and the countless repetitions of similar processes ending in similar results, it is reasonable to suppose that a sufficient number of facts have been observed to establish a very perfect science.

I do not propose entering into an extended review of modes of pruning; neither do I intend to discuss, what is of far more importance, the principles that science has established for our guidance in performing the operation, but will at once proceed to state that, so far as the production of fruit is concerned on trees that form fruit-buds on short-spur branches, such as the Apple, Pear, Plum and Cherry, I am convinced of the evil of *shortening in*, as it is technically termed, the young growth or points of shoots, at any season, either summer or winter.

When we wish to form a thickly branched, bushy plant, such as we desire in a hedge, the end is accomplished by frequently pruning or cutting back the growing shoots as they project beyond the ideal limit, thus encouraging lateral twigs or side branches, slender but numerous, as the object of a close hedge requires; but when the development of numerous lengthy shoots is the aim, as in willows for basket making and similar manufacturing purposes, pruning is performed during winter only, and the more decided or severe the operation, the stronger and better the resulting growths.

Similar treatment to the above, will produce similar results when applied to fruit trees.

I will take the Pear as an example; and certainly no variety of fruit tree has been so tortured under the sanction of both science and ignorance, as this has been. When the tree is submitted to a regular course of winter pruning, together with a regular pinching of young growths during summer, a thicket of slender growths is produced, and, if it is followed up with skilful persistence, may produce that great desideratum, a beautiful pyramidal shaped tree.

On the other hand, when summer pruning in its every shape, is abjured, and thorough, or severe winter cutting the systematic rule, a profusion of upright growths, of more or less luxuriance, are yearly produced, and yearly removed, just as practiced in the culture of Willows, excepting that the Pear growths are useless, and the Willows are valuable.

All who are familiar with Pear culture, will recognize these widely different modes of treatment, and the distinct forms so produced; also that they both agree in one important particular, that is, they produce but very little fruit.

Having practised both of these systems to my entire satisfaction, or rather dissatisfaction, it occurred to me some twelve years ago, to let the trees alone. I had pruned, pinched and disbudded, until my trees were acknowledged to be as finely formed as any in the country, and they certainly were as perfectly outlined as the most beautiful of Norway Firs. I felt the risk of abandoning an orthodox custom, and of being classed among *negligent cultivators;* but my eyes were opened, I saw that these orthodox managed trees were naked of fruit, and resolved, that however much it

might shorten in my reputation, I would not, for the future, shorten in my fruit trees.

To illustrate more particularly the plan now pursued, I may state that in the spring of 1863 I planted a collection of sixty varieties of Pears; these were set in duplicate, one-half being on the Quince roots, the other on Pear stocks. These have received the same general treatment throughout. When planted they were pruned down very closely, many of them cut so as to resemble a smooth walking cane from two to three feet in length. In the fall of that year, they were cut back in order to establish a proper spread of branches, but with the exception of taking a few scions from some of the varieties, the branches have not been shortened since; some few tall branches have been removed entirely where they have become crowded, and a young shoot encouraged at the point of cutting, which ensures the healthy healing over of the cut and is essential in this mode of management, to take the place of future removals.

During the second and third years' growth, young shoots of three, four and five feet in length were not uncommon, and it required some firmness to repress the inclination to prune, but the pruning resolution had not been lightly formed and was not to be lightly abandoned; and even the longest of these shoots became thickly studded with fruiting spurs, and in due time furnished with blossoms, and subsequently with fruit.

Gardener's Monthly.

Eucalypti Leaves.—The following extract from a letter just received from Cannes, will interest many of our readers: "We have had one hundred men sent us, some wounded, others invalids. Dr. C. Bukersley has sixteen bad cases in a hospital, with two French doctors; they are nursed admirably by the *petites sœurs*, and what is very interesting, is the new method of dressing the wounds one of these two, Dr. Gimbert, has introduced. He has tried, instead of lint, Eucalyptus Leaves. The leaves have a catty smell; they are merely laid on the wounds. The balsamic nature of them not only cures, but, after a few hours, all the unpleasant odor of the matter ceases."—*M. J. B.*

Floral Returns.—It is said that the Florists in and around Boston sold $20,000 worth of Flowers on the Saturday and Sunday before Easter last.

YERBA BUENA PARK.

Our last Legislature took the responsibility upon itself to pass an act for the erection of a new City Hall, and for the sale of a part of Yerba Buena Park, to meet the expense of said City Hall building.

It was the right and the duty of our citizens to operate upon this measure immediately after the passage of said act, and either to signify their willingness to endorse it, or their determination to oppose it. We think that all such important questions in relation to our city should really be decided by its own citizens in accordance with our republican principles. But a few fast individuals, instead of leaving a matter of such vital importance to the vote of the inhabitants, either prompted by ignorant and overweening assurance, or by crafty greed after the dollars and cents, and presuming upon their accidental positions, assume the power to make laws antagonistic to the views of their constituents.

That we must have and should have a new City Hall, is a conceded point; but the question arises, whether our citizens are willing to permit the cutting up of Yerba Buena Park for that purpose. If the inhabitants of San Francisco are opposed to the scheme, why did they not make some demonstration against the measure while it was under consideration in our last Legislature? But nothing was done; the Commissioners were appointed to carry out the work; a portion of the Park is graded; a certain part of the land is advertised for sale; all this and other work is done by the Commissioners in good faith, but not until the present time have a few individuals shown discontent; and it is only very recently that the Committee of Retrenchment appointed by the Board of Supervisors reported in direct opposition to the prosecution of the work.

We are of the opinion that the Commissioners will not stop their work, but will go on as they propose without paying any regard to the few, who are discontented. If the work is to be stopped, it should be done by a popular vote, and not because

Mr. so-and-so happens to entertain a different opinion.

We should have much preferred to have Yerba Buena Park devoted to the purpose for which it was originally intended. The city is in need of a Park there, but we are unwilling to exhibit a disposition to interfere with any and every public improvement in this city, merely because we happen to differ in opinion on the matter.

We subjoin an extract from *Carter's Real Estate Circular* on this subject, although we may differ in regard to the remarks upon the postponement of further action by the City Hall Commissioners. The *Circular* says:

"The Market Street front of Yerba Buena Park, with other portions of the same property, are advertised to be sold by the City Hall Commissioners on the 11th instant. We sincerely regret that a penny-wise and pound-foolish policy is to be adopted in the erection of our new City Hall. The concoctors of the scheme which dragged it out to Larkin and Market Streets thought the bill would meet with less opposition in the Legislature if the money for the erection of the new building were provided by the sale of the Market Street front of the land to be used, instead of by the issuance of bonds by the City; but in this we think they were most certainly mistaken. Indeed, we feel satisfied that, if the matter were brought to a vote of the tax-payers, a large majority would be found in favor of issuing bonds and preserving the Park intact. A large public building —the finest, in fact, on the Pacific coast— should not be put away in the background, but should be placed in the center of Yerba Buena Park, facing Market Street, where a commanding view of the whole building may be had.

The right of the Legislature to sell a public street would, we presume, be seriously questioned, and a public park is as much devoted to public use as a street. For this reason, the legal power of the Legislature to order the land sold, has been called in question.

Nothing so mean as a city selling the best inside city park it owns, with the shabby object of providing money for the erection of a City Hall, has ever before come to our notice. The breathing-places in the San Francisco of the future will certainly be few and small enough, without depriving it of this, our largest and best one. If the Hall were erected in the center of Yerba Buena Park, it would then be an ornament, and would not greatly lessen its size; but as the matter is now projected, the Park will be ruined and the building crowded comparatively out of sight.

The City Hall Commissioners have power to postpone the sale until the next Legislature meets, and still continue the erection of the Hall, at least as far as the foundation, the building of which will occupy some months. We hope the Commissioners will adopt this course. We believe the sale of the land is viewed with disfavor, because it will place the City Hall in the background and ruin the Park."

OUR NEXT HORTICULTURAL EXHIBITION.

To judge by the exertions now being made for the Horticultural Exhibition in August next, it should eclipse everything of the kind yet undertaken on the Pacific Coast. The object is a very laudable one, creating taste, affording knowledge, and stimulating efforts to cultivate the best and most useful.

The Horticultural Society is as yet in its infancy; it has not been more than six months in existence, but is untiring in its efforts to make the next Exhibition what it should be, and is assisted by every individual who is able to present something worthy of public notice. The Society labors under difficulties this, its first year. A Horticultural Exhibition ordinarily should occupy one week, and no more; but various circumstances made it apparent that if the Exhibition was connected with the grand Industrial Exhibition, it would be an accommodation to the public, and would be less burdensome to the young Society. By this arrangement the Horticultural Society agrees to keep up its Exhibition during the

time of the Industrial Exhibition, and when we bear in mind that the articles exhibited by the Society are of perishable character, it is certainly a sacrifice on the part of the exhibitors. To keep up an exhibition of this kind for one month, requires a replenishing of various classes from time to time, and we appeal, therefore, to the public in general to come forth liberally and contribute such articles as may be at their disposal, to fill and keep filled the space to its fullest capacity.

There are many amateurs who can contribute articles of special interest, and they can rest assured that whatever they may place in the care of the Committee of Arrangements, will be returned in good condition. What a magnificent sight can be produced by a display of Cut-flowers alone, if our amateurs will contribute their share, and how much satisfaction will it give them to see their own flowers, comparing with those cultivated by others!

The same principle applies to Pomologists and amateur Fruit Raisers; every orchard in the State produces some fruit worthy of a place in a collection.

The Vegetable Garden should be well represented, and we have enough of them here to make the finest exhibit in the world.

All that is necessary, is some public spirit and a small sacrifice on the part of those who are able to produce the material worthy of public exhibition, and we are satisfied that their co-operation will result in an immense amount of good.

Persistence of Life in Bulbs.—When a young man, I was in the employ of Mr. H. Groom, (of Walworth,) one of the most celebrated bulb growers of that day, and it was his practice to have his Tulip ground trenched about thirty inches deep every third year. When this was being done, any surplus stock of roots, or those that had got mixed, so that he was not sure of the names, he would throw into the bottom of the trench, ordering them all to be chopped up, he at the same time standing by to see the operation properly performed. By some means, on one occasion, two bulbs escaped, for, in three years after, in trenching the ground again, these roots were found to be plump, and in good condition. They were at once planted, and bloomed well, but late, the following spring.—*J. Dale.*

WORK FOR JUNE.

From present appearances, we may expect that the soil will dry out to a greater depth this coming season, than has been the case for a number of years, in consequence of want of sufficient rain during the past season; we may also fairly expect that springs, wells and other resources for water will furnish a less quantity during this coming summer, than is usually the case. Extraordinary precautions should therefore be used to prevent loss from deficiency.

In our last issue we advised mulching of trees, shrubs and vines, which were planted out during the latter part of the season, as the best remedy against drought, and, inasmuch as we have had no rain of any consequence since, this mode of treatment impresses itself very forcibly on every intelligent mind. It is an easy matter to obtain straw or litter of some kind, to put around trees and vines, and the time required for such labor is of small consideration compared with its beneficial results. In the Old Country, and in the older States of the Union, farmers have at times covered their entire orchard-grounds with hay, straw or litter of some kind, and the results have been highly satisfactory in every case. Copeland, one of our ablest writers on Horticulture, says: "Salt hay is the best; rain washes the salt into the earth; the hay or straw packs closely over the earth and shields it from the sun's rays; evaporation can take place but slowly, and no matter how dry the season, land so protected will be cool and moist." He says, further: "A thick mulch of old chips and river waste was found by Mr. Cleveland, formerly a large Pear-grower in New Jersey, to be a preventive against cracks in the fruit, to which it also imparted superior flavor, at the same time that it increased the smoothness of the bark." He found, too, that native Grapes, previously much injured by rot and mildew, were saved from such diseases by the mulch. It should be, when settled, five or six inches thick. If the orchard is set, where no orchard should

be—in a wet, undrained place—a mulch will be injurious, as it will keep the earth too wet; and in springy land, well drained, it will be less valuable, as the springs will give water enough, and the sun's rays are desirable, to warm the earth.

Besides taking these precautions, we must be careful in the use of water for irrigation. It is no exaggeration, when we presume that more than one-half of the water used for irrigating purposes, is wasted; and this should be avoided, when we have good reason to expect a scarcity of water. When the supply of water is limited, it will be much better to do the necessary watering of newly planted trees and shrubs, and such plants as are in want of frequent irrigation, with the watering-pot, instead of the hose.

In the established Orchards and Vineyards very little can be done during the coming month, except looking after insects of all kinds, and keeping such suckers cut down as make their appearance near the trunk and stems of trees and vines.

In the Kitchen Garden nothing is of more importance than to keep the ground in a highly cultivated condition; frequent hoeing is necessary, and if it can be done once a week around Tomato-plants after a good watering, it will help them very much; the same may be said in regard to Cabbages, Cauliflowers, etc. Where ground of sufficient moisture can be had, late Peas may be planted, which pay generally better than early ones; it is also time yet for late Cabbage and Cauliflower. For the destruction of insects, we can only repeat the article recommended in our last issue—whale-oil soap in a thin solution, nothing better has yet come to our knowledge.

Flower gardens are now in their glory, a profusion of flowers everywhere; but we have frequently noticed while the beautiful display of flowers during this month gives much pleasure and satisfaction, that the little tender plants, which have just made their appearance from some choice seeds, are entirely neglected and uncared for, and in many cases they will perish. It will not do to bestow all our care and affection upon a vigorous Rose-bush which dazzles our eyes with its bright and beautiful flowers, while we leave the tender little Aster or Balsam to its own chances. The latter requires the nursing, while the former certainly affords us encouragement for our labor and toil in the flower garden; before long the blossoms which fill our hearts with delight, will have died away, and unless we have nursed the little ones with proper care, the garden will look destitute.

Frequently we notice the effect of the flower garden marred by neglecting the cutting away of faded blossoms; this should always be done as soon as they lose their freshness; faded and decayed flowers are a nuisance, and also an injury to the plant.

Greenhouses and Conservatories should receive a thorough overhauling and cleaning up. Many plants would do far better in the open air during the next four months, and the space thus made vacant may be used for the propagation of plants and the planting of choice seeds.

House-plants kept in windows should be placed and kept in the open air, and may be replaced by Cacti, Begonias, Calladiums, Calceolarias, Gloxinias, etc., all of which will bloom during the next two or three months.

Although there is a superabundance of flowers now for our floral establishments, choice flowers are very scarce, Camellias are almost entirely out of season, and Tuberoses and Cape Jasmines will come in later; all we have now in the market for choice bouquets are Orange-blossoms, Spanish Jasmine and a few Wax-flowers; Stephanotus we may expect in bloom soon.

THE UTILITY OF SHEEP TO THE FARMER.

An Exchange says: "The Turnip crop of England, which some have estimated as of more consequence to that country than its Wheat crop, is not so much so for the Meat and Wool it produces, as for the great fertility that mode of sheep pasturing gives to the soil. The largely-increased crops which fol-

low the sheep track over a Turnip field would in many cases pay expenses, even if the Mutton and Wool were given away." Why do not our farmers add a few sheep to their farming stock?

ABOUT WATERING.

"How often shall I water my plants?" asks the purchaser of a small bill at the nursery. In window gardening the water question is also one of the anxious ones, and even in the regular operations of gardening, under the treatment of quite practised hands, the relation of water to plant life is not as clear as it might be.

We shall understand better how to water, if we correct first some impressions derived from old works on physiology. It is said that plants want water. This is not strictly true. Water is found in plants, but it enters rather in the form of vapor. A soil that is wet will grow only water plants; and it is a remarkable fact that these water plants seem to have very little water in them. A Reed or Bulrush grown in water, has far less water in its structure than a nearly allied species grown on dry land. The plants which have most fluid matter in them are those grown in the dryest places. The deserts of Africa abound in Euphorbias; while on the plains of Mexico the only moisture wild cattle can often obtain is from the large spiny Globe Cactuses, which they manage to cleave open with their hoofs.

A wet soil is totally unfit for plant growing. A plant standing twenty four hours in water is often irreparably injured. A Hyacinth, to be sure, will live one season in water; but all the matter which goes to make up the flower is prepared the year before, and after flowering, the bulb is exhausted and almost worthless.

A good soil for plant growing, therefore, is not one which will hold water; but one in which water will rapidly pass away.

The soil itself is composed of minute particles, through which air spaces abound. The water must be just enough to keep these particles moist, and the air in the spaces is thus kept in the conditon of moist air. The roots traverse these air spaces, and it is therefore moist air which roots want, and not water.

If it were water simply which plants wanted, we should cork up the hole in the bottom of the flower-pot, and prevent the water getting away. Instead of this we try to hasten the passing of the water through as much as possible, by not only keeping the hole as clear as possible, but often by putting pieces of broken material over it.

A plant will generally be the healthiest, therefore, which wants water the oftenest. This will show that there are plenty of air spaces, and that the roots are making good use of them. If it does not often want water, it is in a bad way, and more water will make it worse.

How often to water then, will be according to how easy the water passes away. If when you pour water on earth it disappears almost instantaneously, it would be safe to water such plants every day.

And now for open air work. We often hear good men say about a piece of ground rather low, that it is wet in winter to be sure, but a few open ditches at that time to carry off the water will make all things right. But water in winter does not hurt things much. It is water in summer,—water while plants are growing, which hurts them. And the reason why land is wet in winter, is because the conditions are such that water cannot pass rapidly away, and such land is of course the same in summer. Every shower takes several days to soak away, meantime the plants suffer.

So the constant aim of the cultivator, whether of plants in pots or things in the open ground, should be to make water always pass rapidly away, and yet to have the soil of such consistence that a moist atmosphere should be always present in the air spaces existing through it.

In its relation to moisture, we might say a little about the consistence of the soil. If the

earth, for instance, were composed of all sand, there would be little moisture except in the air spaces. The particles of flint of which sand is composed are not capable of absorbing moisture, any more than we can get water to soak through a glass bottle. For moisture retaining purposes, therefore, sand is useless. But it is useful, sometimes, to add sand to clayey soils, which otherwise would lie so close that there would be no air spaces. It indeed helps to make air spaces, and has no other use.—*American Gardener's Monthly.*

A WORD TO OUR POMOLOGISTS EAST AND WEST.

Much has been said about Californian fruit compared with that of the East, and many of the varieties cultivated here and sent to the Eastern Market have been pronounced inferior in flavor to those raised in the East. The Horticultural Society should make a strong effort to induce some of the fruit growers in the East to send some collections of their fruits to be placed side by side with our Californian products at the Horticultural Exhibition. Nothing would be more gratifying and give more general satisfaction to fruit growers in particular, and the public in general, than to have an exhibition of that kind. Our Eastern Pomologists are as a class high minded and public spirited men, who would delight in forwarding a small collection, if the application was made to them in due time; and our transcontinental Railroad Companies may be induced to carry such collections free of charge, if the matter is properly laid before them.

THE CROPS.

While reports from some localities show a total failure of the crops this year, we hear from others that the yield will be above the average; it is difficult to form a correct idea of the exact condition of the fields, but we venture an opinion that the average yield will fall short of that of last year, although in many districts the area under cultivation is larger than that of last season.

No intelligent man will dispute that many of the failures of crops must be attributed to careless and imperfect cultivation, yet we know of a few cases where the ground was well prepared and the seed sown early, and yet in spite of all this the crops have failed. But even in this case our farmers who are suffering, must shoulder a great deal of blame themselves. The more careful observer will not be satisfied alone with the fact, that his crops have been and are suffering for want of rain, which it was his good fortune to enjoy in sufficient quantity during many years past, but he will avoid a similar recurrence in the future, and he will study to ascertain what has been the immediate cause of the failure; if caused by bad management of the soil, he must improve his mode of cultivation, but if caused solely by want of moisture, he will come to the conclusion, that certain localities cannot always be depended upon for good crops, and he must in future be more careful in the selection of land for farming purposes.

Stanislaus County has been one of the heaviest Wheat producing counties in the State; reports from thence during the latter part of April were encouraging.

Santa Clara County does not produce so much Wheat as the former, but the class of Wheat it produces is much depended upon for home consumption. The flour made from Santa Clara Valley Wheat is comparatively strong, and is preferred by our bakers to all others. The prospects of the crops there, are, we believe, below the average.

From San Joaquin Valley we have very discouraging reports, the crops between the river bottom lands and the foothills of the Coast Range having completely died out.

Sonoma and Napa are good for their usual returns.

The Napa *Register* claims that Napa County, though small, is the first Wheat-growing county in the State. It admits that Sonoma County, with its 150,000 acres sown in Wheat, will produce more than the 50,000 acres de-

voted to the culture of that cereal in Napa; but it is confident that no county in the State will raise so many bushels of good Wheat to the acre. It claims that there are, in Napa County, 50,000 acres in Wheat, which will average nearly or quite twenty bushels to the acre. This gives 1,000,000 bushels of Wheat, worth at the threshing-floor, say $1,500,000. Farmers say there never was a more promising prospect for a large crop in that county, at this time of year.

From Solano, also a very heavy Wheat-producing county, reports are discouraging; probably not more than one-third of the usual crop can be expected.

Colusa has suffered also, and will fall short.

From Monterey County the prospects are satisfactory. Of the crop prospects, the *Standard* says: "From all we can learn, after the most diligent inquiries, the prospects of a full crop in the Salinas Valley are as good, if not better than in any other part of the State. We have conversed with many gentlemen on the subject during the week, gentlemen who have been over the grain districts of the State, and from them and private letters we have received, with the information we have gained from our farmers, we can safely say that the yield in the Salinas Valley this season, will equal, if not surpass, that of any other year."

Alameda will almost come up to its usual yield, while San Mateo and Contra Costa have suffered to so great an extent that not more than one-half of the usual crops are expected.

Speaking of the crop prospect in Kern County, the *Courier*, of Bakersfield, says: "Crops here look as well as Nature can make them. We depend here entirely upon irrigation, and as far as the farming interest is concerned, we are independent of rain, and fearless of drying winds, or any other of the usual contingencies affecting the growth of crops as far as moisture is concerned. Our crops are always abundant—more so, perhaps, in dry seasons than in wet. The soil is rich, the climate warm, and water plentiful. Failure here never enters the calculation of farmers, unless in so far as it may result from the depredations of wild cattle, a nuisance we do not propose to suffer from much longer." We believe that in a few years there will be few localities in California, where any attempt is made to raise grain, in which irrigation will not be resorted to for the purpose of securing a crop.

Placer, Calaveras, Amador, and El Dorado Counties may be counted upon for larger returns than former years have shown.

Crops in Nevada County.—The Grass Valley *Union*, of April 11th, says:

We have seen several farmers from the lower and western part of the county, and they inform us that crops never looked better than they do at the present time. In Penn Valley, grain and garden productions are very forward. The grain planted in hard ground, with a harrow which scarcely scratched the surface, does not look so well. Careless, lazy planting will not make crops in any county.

All these reports show that the fields of the foothills of the Sierra Nevadas and those of the Coast Range, with the exception of San Mateo and Santa Clara, have suffered less, while our extensive central valleys, between the foothills of the Sierra Nevadas and the Coast Range, present a very discouraging aspect.

As for the fruit crops, the prospects have never been brighter, and they will make up in many localities for the deficiency in the cereals.

We concur in the opinion of the *Pacific Rural Press*, which says: "Though the season will undoubtedly be disastrous to many, and will bear especially heavily on those in the great interior valleys, who, being deeply in debt were depending on this year's crops to help them out, yet there is no doubt, from the above showing—(to say nothing of the Oregon surplus, which will be larger than ever, this year,)—that we shall have not only an abundant supply for home consumption and next year's seed, but also a small surplus for export."

BEE NOTES.

BY M. QUINBY.

When the weather is wet or cold for a few days, light colonies will need especial care to prevent starving. In favorable springs a small proportion of stocks will swarm during the blossoming of apple orchards. Many will swarm about the time when these blossoms disappear, but not generally until clover comes. Bees that do not gain in honey during the season of apple blossoms, will be quite sure to need feeding before that time. A knowledge of their natural history is quite as convenient this month as any other. The appearance of the queen-cells indicates when to expect swarms. With the movable-comb hive it is only necessary to quiet them with smoke or sugar water, when the frames can be lifted out and seen. The box hive must be inverted. The examination is more difficult and the results more uncertain, but with smoke it can be done. The queen-cells are generally found on the edge of combs, from three to twenty in number. The open end being downward, the contents are easily seen. They are sealed up when about an inch long, when, if the weather is warm, the old queen leaves with the first swarm. The advantage of being tolerably sure when the first swarm will appear, is obvious. They will be a little in advance or behind this period, in proportion as honey is plentiful or scarce. If through neglect it is uncertain whether a hive has swarmed, and none of these cells are found occupied, it is evidence that they have not. Second and third swarms, hived now, will be likely to get enough honey to winter them, unless the season is very poor. This may be done when increase of stock is more desirable than box honey. Have all hives clean and somewhat rough inside. Swarms should be hived immediately after clustering. Get all in, if possible; stir them gently, or sprinkle with water, if obstinate; set them on the stand at once; raise the front, and protect from the sun. I much prefer artificial swarming, being careful to do it only when the bees are getting honey and seem prosperous.

Any time before the 25th of May, in this latitude, the box hive may be treated as follows, and the best results realized: The hives, frames and comb being ready, proceed to raise the hive a little and smoke just enough to keep the bees quiet; bring into a warm room, the windows all darkened but one, so that the few bees which fly will gather to the light, ready to be brushed into the hive when that is arranged; turn the hive bottom upon a table; with a long, thin knife loosen the combs from the sides; split each of the sides in several pieces with an axe, and remove three of them, leaving the combs standing upright. Very many of the bees, by this time, will creep to the top of the combs and collect in little clusters, showing no disposition to sting. The outside comb is cut off at what is now the bottom, and lifted out and laid on a flat surface, and the bees brushed back—the edges trimmed until they just fit the frame. The combs are held in frames by splints, as described in "Bee Keeping Explained." When arranged, it is put in place in the new hive. The drone comb should nearly all be rejected.

The bees on the second comb taken out may be brushed into the new hive, where they will gather on the first comb. All the combs containing brood must be placed in the same relative position that they occupied before, as the same number of bees can better protect them from the cold. When all is done, the scattered bees on the window are brushed down into the hive, which should be placed directly under it. All should be made to go among the combs.

The hive is now to be closed and carried to the stand.

The chances are that there will be room enough to hold all stores that are gathered until next month; yet, if they seem crowded, give another comb or two.

AGRICULTURIST.

EDITOR:
C. A. STIVERS, M. D.

ASSOCIATE EDITORS:
F. A. MILLER, C. STEPHENS.

Editorial Portfolio.

Among the many customs and practices that have had a marked influence upon our civilization, that of Fairs and Exhibitions occupies no small space. Their importance and value have always been recognized, both by individual and State, and each has given liberally to sustain them.

Fairs, out of which our more modern exhibitions sprang, have long been in existence in Europe and Asia, where in former times they were not only used for the display of all kinds of merchandise, but were also annual markets for the sale and purchase of various commodities. Although fairs as at first conducted are becoming obsolete, and the word applied in a newer and wider sense, still in some parts of Europe they retain their old character; as is the case in the Easter and Michaelmas Fairs at Leipsic, and the St. Peter and St. Paul Fair, at Nishnij-Novgorod, in Russia.

The first exhibition proper was held at Paris, in the year 1798, and although on a moderate and somewhat restricted plan, yet it served as the model upon which all of the subsequent exhibitions have been based. For a time France was the only nation that gave its attention to these displays, but finally the custom spread to England, and culminated in that most famous of all exhibitions, the "World's Fair" of 1851. Since that time there have been a number of exhibitions in various parts of the world; Dublin, New York and Paris have each in turn had a world's fair; and though they may not have assumed such magnitude or achieved such a success as the one held in London, still they had an influence which was productive of good.

It is by means of fairs and exhibitions that people of different nationalities are brought into closer and more friendly relations, all striving for the palm of victory, bought by no blood-stained fields, or the bitter cry of widows and orphans. It is their province to humanize the people, and to elevate and ennoble the great class of producers, incorporating them into that grand army at whose head is borne the banner of progression, and where the drum is replaced by the anvil, and the *mittrailleuse* by the steam engine.

In the settlement and building up of a new country, fairs and exhibitions are an essential part of the people's work; for by them they not only see their own advancement, which stimulates them to still further exertions, but others from abroad are thus enabled to see and judge of the capabilities and products of that country. These reasons, which apply in a general way to all the world, come to us with a double force. We have here a new country, rich in all things that are essential to the building up of a great and wealthy State, and it is our duty to encourage and develop these advantages, both for ourselves, and for the good of our common country.

We have been led to make these remarks in regard to fairs and exhibitions, from the fact that the Mechanics' Institute will hold its Eighth Annual Exhibition during the month of August, in the present year. The exhibitions held under the auspices of this Institute, have always ranked high as to their character and usefulness, and it is intended that the coming one shall excel its predecessors, partaking as it will somewhat of the character of a world's fair. Besides the efforts made in our own State to encourage and invite exhibitors, the Institute has addressed circulars to Australia, China, Japan and the Sandwich Islands; believing as they do, that the entire Pacific side of the world is to be our domain, and within which we have a special field to cultivate.

In conjunction with the Institute's exhibition, the Bay District Horticultural Society of California will hold its First Annual Fair, which at the present outlook promises to be the grand feature of the exposition. We hope and trust that our Agriculturists and

Horticulturists will take hold of this matter, and make such a display as shall do credit to themselves and the State.

REMOVAL.

The office of the California Horticulturist has been removed to No. 514 Kearny Street, where we shall be happy at all times to see our Horticultural and Agricultural friends, who may call upon us. All communications intended for this Journal must be addressed to the above number.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

The first gathering of members of this Society, for the purpose of discussing matters pertaining to Horticulture, took place on Saturday, April 15th.

The subjects under consideration were: Which are the best Roses for pot culture? and, Which is the proper mode of treatment in order to achieve success with them? After a lengthy debate on the subject, the following varieties were agreed upon as being the best adapted for that purpose in California:

Tea Roses.—Safrano, La Sylphide, Lyonaise, Eliza Sauvage, Devoniensis, White Daily, Triomphe de Luxembourg, Vicompte de Gazes, Bougère.

Bourbon Roses.—Mrs. Bosanquet, Bourbon Queen.

China Roses.—Agrippina, Louis Philippe, Eugene Beauharnais, Semperflorens, Sanguinea, Minature Rose.

Hybrid Perpetual Roses.—Jules Margottin, Lord Raglan, General Jacquimenot (Pauline Lanzezeur), Geant de Battailles, Madame von Houtte, Baronne Prevot, Prince Noir (Black Prince), Emperor Napoleon, Louis Odier, Louis de Arc.

Noisette Roses.—Solfaterre, Marshal Niel, La Marque, Madame Hyman, Gloire de Dijon.

In the treatment of Roses under pot culture, it must be distinctly understood that forcing roses for the market is not the mode applicable to pot culture in general. In fact, the majority of roses which are forced under glass by our florists are unfit for that purpose. The discussion having been much protracted, the conclusion of the subject was unavoidably postponed until a future time.

The above list of Roses can be strongly recommended for open-ground culture.

The eighth regular meeting of the Society was held on Saturday, April 29th, for the transaction of business.

The agreement between the Mechanics' Institute and the Horticultural Society, relating to the next exhibition, was read and approved.

The following new members were elected: J. Doyle, Thos. Scott, C. Seitz and William Dose, of San Francisco, and William Meeks, of San Lorenzo.

The matter of incorporating the Society was laid over until the next regular meeting.

ACCLIMATIZING SOCIETY OF CALIFORNIA.

This Society (formerly the Ornithological and Piscatorial Acclimatizing Society of California) was incorporated last month, under the name of the "Acclimatizing Society of California," with a capital stock of $50,000, divided into 5,000 shares of $10 each. At a meeting held April 27th, the following named gentlemen were elected as Trustees for the ensuing three months: W. A. Newell, M. M. Estee, S. B. Clark, John K. Orr, D. J. Mills, J. B. Green, E. H. Nevill, C. A. Stivers, Penn B. Horton, Alexander Badlam, John Williamson and John C. Green. At a subsequent meeting of the Board of Trustees, held May 5th, the following officers were elected: *President*, W. A. Neil; *Vice President*, Alexander Badlam; *Secretary*, John Williamson; *Treasurer*, D. J. Mills.

The object of the Society is the importation of all the practicable varieties of choice Game Birds and Fish into this State, which

will be carefully preserved, and are specially protected by Act of Legislature for a period of four years.

All communications should be addressed to the Secretary, No. 632 Mission Street, San Francisco.

MEDICAL CONVENTION.

Our city has been graced during the first part of this month, by the presence of a number of medical gentlemen from the Eastern States, who with the aid of those resident on this coast, have been busy holding a National Convention. We are much pleased to see our State commanding attention enough to draw so many professional gentlemen within its borders; but we are of the opinion that the late Convention was more of an excursion party, than an actual working assembly. They had many important committees to report, but with a few exceptions they failed to do so. One of the most important, that of Cinchonia Plantations, we had looked forward to with expectant interest, but it did not make its appearance.

In its last hours the Convention was thrown into utter confusion by the apparition of the "Coming Woman," who, genii-like, rose up before their eyes in the dual shape of a "sister and brother." Gentlemen, a little more dignity and attention to the essential business of the profession, and less of "isms" and idle talk, would better the standing of the American National Medical Association.

"THE RURAL CAROLINIAN."

The May number of this Journal comes to us replete with good and valuable articles upon Southern Agriculture and Horticulture. It contains a fine plate of General Johnson Hagood, President of the South Carolina Agricultural and Mechanical Society.

Milk and Meat.—Boiled Peas greatly increase the milk of cows and the growth of pigs.

STATE AGRICULTURAL SOCIETY.

The Premium List to be awarded at the 18th Annual Fair of the California State Agricultural Society, to take place at Sacramento on the 18th of next September, is before us. We feel sure, from the preparation made, that the coming fair will redound to the credit of the Society, and also to the State. Over $20,000 have been appropriated for premiums.

SANTA CLARA VALLEY AGRICULTURIST.

We have received number one of this new monthly paper, published at San Jose, by Brand & Holloway, and edited by S. Harris Herring. It is gotten up in a very neat form, and, judging from its contents, it promises to be a valuable addition to the agricultural literature of the State.

CATALOGUE.

We acknowledge the receipt of Hovey's Illustrated Catalogue of New Plants, for 1871; also a notice and description of a new seedling Camellia, the "Mrs. Anne Marie Hovey."

DOMINICA.

We are indebted to the Hon. Cornelius Cole for a copy of his speech on the subject of "San Domingo"—a subject upon which too much has already been said, and the sooner it is laid to its final rest, the better for all concerned.

A SUGGESTION.

We shall endeavor to comply with the request of our correspondent who writes to us under the above heading. He is evidently a lover of the Horticultural Art, and therefore we shall "in all our best obey."

INJUNCTION ON SALE OF PARK LOTS.

Since the article on the Yerba Buena Park was handed to us, and placed in type, the Park Commissioners have been enjoined by the City from selling the land advertised. The sale has therefore been postponed until June 15th, when the Commissioners state that it will be consummated. We shall see.

OUR FRUIT AND VEGETABLE MARKET.

Strawberries are plentiful, and they retail at 10 cts. per pound—cheap enough for everybody who can appreciate that delicious fruit.

Cherries have just made their appearance in quantities, although the first installment was brought in on the 1st of May. They sell readily at 50 cts. per pound, retail.

Oranges, Lemons and Limes we have in abundance.

Gooseberries have made their appearance, and sell at from 10 to 15 cents per pound.

Ripe Currants are just coming into market at 50 cents per pound.

Rhubarb is in abundance.

Apples of last year's growth are still plentiful, and can be bought for 12 cents per pound.

Of Bananas, Pineapples, Mangoes, Plantains and Tamarinds, we have a fair supply from the tropical regions.

Vegetables are plentiful. Although Cabbages, Cauliflowers and old Potatoes are going out, there is a fair supply of new Potatoes, Peas, String Beans, Broad Beans, Artichokes, Summer Squash, Cucumbers and Lettuce, etc.

We are pleased to see that both Fruit and Vegetables are superior in quality to the produce of last season.

The soil and climate of Los Angeles, for the growth of the Sugar Beet, will be fairly tested this season; the result, we may fairly anticipate, will be another Beet Sugar manufactory.

NEW AND RARE PLANTS.

According to the London *Field*, several new and promising varieties of Lilies have made their appearance during the year 1870.

Lilium Leichtlinii, having much recurved pale yellow flowers, deeply spotted with dark.

Lilium longiflorum albo-marginatum, the leaves distinctly margined with white.

Lilium tigrinum flore pleno, a double form of the Tiger Lily, with several tiers of petals overlaying each other.

Lilium purum, a remarkable hybrid obtained from a cross between *L. auratum* and *L. speciosum*, sensibly perfumed, all of which are "decided acquisitions," as the florist says.

Exochardia grandiflora, which is pictured and described by the New York *Horticulturist* is a very remarkable shrub, but little known. It grows about six feet high, is of a graceful habit, and produces its large, pure white flowers in spring. It is a native of China, and somewhat difficult to propagate.

Solanum ciliatum, a branched annual, twelve to eighteen inches high; bearing exceedingly beautiful berries of the size of a Tangerine Orange, and of an intensely pure scarlet color, overlaid by a glaucous bloom. Nothing more brilliant can well be imagined.

Gardener's Monthly.

Spirea japonica aurea variegata, is an extremely beautiful variety, one of the most popular plants in cultivation. It differs from the green-leaved plant, with which all are familiar, in its elegant leafage, being traced with golden veins, and borne on rosy-tinted stems.

Croton cornutum.—An interesting member of the large group of new Crotons introduced by Messrs. Veitch & Son. It is characterized by a peculiar extension of the midrib, which forms a horn-like process at the apex of the leaf. It is a compact growing variety, with leaves, which vary slightly in form and are richly spotted and blotched with yellow.

Gardener's Chronicle.

New Double Wistaria.—Mr. Francis Barkmann, of Jamaica Plains, Mass., received a small plant of Wistaria from Japan, several years since, which bloomed last summer, when it was discovered to be a new and valuable variety, with double purple flowers. The plant is perfectly hardy, resembling the old *Wistaria sinensis*, so well known as one of the most beautiful of all our climbing plants.

Rural New Yorker.

Clematis patens, John Gould Veitch.—This beautiful and evenly double-flowered variety of that well known family of climbing plants, the *Clematis*, was introduced direct from Japan by the distinguished collector and horticulturist whose name it bears. It produces its fine porcelain blue flowers in great abundance; they are four inches in diameter, and of nearly perfect form. It is like other *Clematis*, perfectly hardy.

"Van Houtte's Flores des Serres."

Hydrangea stellata prolifera.—A very ornamental semi-double flowered variety of this well known, hardy, flowering shrub; colors, pink and white. It is likely to be an acquisition.

Flores des Serres.

Correction.—In our notice of the "Acclimatizing Society of California," on page 215, second column, we see that two errors have occurred, but too late for remedy: as one of the Trustees, the name of E. H. Nevill should have read *E. H. Neil;* and, in the sixth line below, it should read, for *President*, *W. A. Newell*, instead of W. A. Neil.

Apples as Food.—The importance of Apples as a food, says Leibig, has not hitherto been sufficiently estimated or understood. Besides contributing a large proportion of sugar, mucilage, and other nutritive compounds in the form of food, they contain such a fine combination of vegetable acids, extractive substances and aromatic principles, as to act powerfully in the capacity of refrigerents, tonics and antiseptics.

Don't spread Manure over too much ground. It is better to raise one hundred bushels of potatoes upon half an acre than upon two acres—you save mileage in planting and digging; besides you have one and a half acres to put into clover.

Editorial Gleanings.

Rearing Grape Vines in Pots.—A Horticulturist in Stuttgardt has devised an ingenious method of rearing grape vines in pots so as to obtain grapes with very little trouble in a room or other sheltered place. For this purpose a vigorous healthy cutting of the late growth of the wood is taken, from three to five feet in length, having at the upper end two fruit buds. The cutting is to be entirely enveloped with moss, and bound with bast, but so as to leave the extremity bearing the fruit buds uncovered. The cutting thus prepared is to be inserted spirally into a sufficiently large flower-pot, leaving the fruit buds projecting above the edge of the pot, which is then to be filled with rich hot-bed earth well moistened, and placed in the sun behind a window and kept uniformly moist. The water applied should never be cold, but rather lukewarm, so as to stimulate to the utmost the development of the young roots. When the weather is such that there is no danger from night frosts, the pot may be placed outside the window or against a sunny wall, or even inserted in the ground in order to secure a more uniform moisture and temperature. When the two fruit buds have produced branches, having bunches of grapes upon them, these shoots are to be trimmed so that two sound leaves remain over each grape shoot, in order to keep up the circulation of the sap, since without this the grapes would not develop. A single leaf would be sufficient, but two are better, for greater security. An occasional watering with a liquid manure is advisable in order to stimulate the growth of the plant, although this must be applied with care, since an excess will do more harm than good. In one instance a grape shoot treated in this way produced nine large bunches of fine grapes, although such a number would be rather more than could be coveniently supported by the plant.

Potatoes.—Wood ashes make an excellent and reliable manure for potatoes.

Love of Flowers in New York.—Flowers enter very largely into all the solemnities, fetes and events of New York life. The gentleman who wishes to testify his devotion to a young lady, does so daily by offerings of magnificent flowers. Statesmen, orators, opera-dancers and divines, are alike accustomed to receive these floral tributes. The bride is married beneath a magnificent floral bell; the coffin is decorated with exquisite crosses, crowns and wreaths of flowers. The Rev. Henry Ward Beecher preaches with a floral basket by his side. George Francis Train has also tributes of flowers, which he waves in the course of his denunciation of British influence and the old fogies of the Bible. On the occasion of a benefit night to a favorite actress lately, a basket of choice flowers was brought on the stage, as an offering from some of her admirers, which had to be carried by four men.

"Belgravia."

Small Farms.—Small farms make near neighbors; they make good roads; they make plenty of good schools and churches; there is more money made in proportion to the labor; less labor is wanted; everything is kept neat; less wages have to be paid for help; less time is wasted; more is raised to the acre, because it is tilled better; there is no watching of hired men; the mind is not kept in a worry, a stew, a fret all the time. There is not so much fear of the drouth, of wet weather, of a frost, of small prices. There is not so much money to be paid out for agricultural implements. Our wives and children have time to read, and to improve their minds. A small horse is soon curried—and the work on a small farm is always pushed forward in season. Give us small farms for comfort, aye, and give us small farms for profit.

Neat Walks.—A source of much discomfort during the winter and spring months, around a large majority of farm-houses, lies in muddy and undrained walks. From the house to the road, the barn, and other out-buildings, well kept walks should be the rule. No matter how neat fences and buildings may be, with this matter neglected, an untidy and uncomfortable aspect is presented. With many farmers we have visited, especially in the Western States, a lot of old boards of various lengths and widths are distributed along the paths in the muddy season, and these, with no attention paid to drainage, tilt and splash and bespatter disgustingly. Why is it that farmers do not take more pains with their immediate surroundings? A well raised path of gravel rolled and rounded, when the material can be had, forms the best and cheapest walk, but in all parts of the country there are various resources to remedy the evil of muddy paths, and only simple ingenuity is required to apply them.—*Journal and Farm.*

The Product of one Weed.—A person desiring to know what would be the influence of a single weed upon the agriculture of a field or garden, selected a plant of purslane, (pusley, or pursley, as called by some,) the meanest plant, and carefully counted the number of pods. It was a large sized plant from a rich spot of ground. The number of its seed-pods was 4,613. He then took fourteen of the pods—seven small ones, four mediums, and three of the largest, and counted the seed in them. The result gave an average of ninety seeds to the pod. Thus in this single plant we have the enormous number of 415,170 seeds! If these were spread over a plat of ground, and should germinate, and a man should attempt to cut them with a hoe, and should average six plants at a blow, and make thirty strokes of the hoe per minute, it would take him thirty eight hours and twenty three minutes to cut them out! Or, if these weeds were equally disseminated at the rate of four to the square foot, they would cover two and a third acres of ground! Again, allowing that only one-third of these seeds germinate, and that the product should be one-half as rich in seed as this one, yet they could produce the enormous number of 28,727,528,150 seed—enough to cover broad fields the third year from one seed! Do not these figures show

the immense importance of cutting and destroying every weed before it goes to seed? There is no doubt that many other weeds are fully as prolific as this. It has been known in the wet weather to grow and mature its seed long after it had been entirely severed from the root.

Increasing the Flavor of Fruits.—For a number of years past there has been a decided tendency on the part of fruit-growers, and more especially those who cultivate for market, to grow only large fruit, or rather varieties of small fruit of a large size. We are not surprised at this, from the fact, that however insipid and flavorless a strawberry may be, it will always command the highest price in the market. Hence, with the cultivator, it becomes a matter of dollars and cents. Fruit-growing for profit is his business, and it is to such, generally, a matter of indifference whether the fruit is of fine flavor or otherwise, so that it finds ready purchasers at good figures. It would be simply folly to argue against such a spirit, and as long as people are content to sacrifice the sense of taste for that of sight, we have no right to object.

But it does not follow, necessarily, that large fruit is obtained at the expense of its flavor. Every Horticulturist knows that a wet, cloudy season invariably produces greatly increased acidity in small fruits, and this is especially noticeable in the Peach and the Strawberry. The result is, of course, beyond human control. But not so in some other cases. We believe that it is in the power of a cultivator, who has not too keen an eye to profit, to command a flavor. "The method," says a first-class authority on this subject, "is to thin out severely."

The same writer assumes that if a Peach or Plum tree is allowed to mature five or six dozen of fruit where only one-half that quantity should have been permitted, the result will be a flavor of decidedly inferior quality. A case in point is cited: A favorite Plum tree in 1861 bore a light crop of fruit, all of which was carefully preserved. The aroma of the fruit, when made into puddings and tarts, was delicious. In 1862 the crop of Plums on the same tree was so abundant as to hide the leaves. The usual quantity was preserved, but the fine aroma of those of the previous year was wanting. From all of which he insisted on the following: "By thinning you make indifferent fruit good; by crowding you make good fruit bad." We are aware that it is asking a great deal of an amateur to thin out fruit, but it will pay in the end when quality and not quantity is desired.

Farmer's Journal.

Effect of Pine Trees on the Soil.—A remarkable instance of the effect of pine trees on the soil in which they grow, has been published in the *Wood and Water Reports* of the north of France. A forest near Valenciennes, comprising about eighteen hundred acres of scrub and stunted oak and birch, was grubbed up in 1843, and replaced by Scotch firs *(Pinus sylvestris)*. The soil composed of silicious sands mingled with a small quantity of clay, was in some places very wet; it contained two or three springs, from one of which flowed a small stream. The firs succeeded beyond expectation, and large, handsome stems now grow vigorously over the whole ground. It was in the early stages of their growth that the remarkable effect above referred to was noticed. The soil began to dry; the snipes that once frequented the place migrated to a more congenial locality: the ground became drier and drier, until the springs and the streams ceased to flow. Deep trenches were dug to lay open the sources of the springs and discover the cause of the drying up; but nothing was found except that the roots of the firs had penetrated the earth to a depth of five or six feet. Borings were then made; and six feet beneath the source of the spring, a bed of water was met with of considerable depth, from which it was inferred, the spring had formerly been fed. But in what way its level had been lowered by the action of the firs, could not be determined.

Almond Trees.—Col. W. W. Hollister, of Los Angeles, has set out, this season, 50,000 Almond trees. Of this valuable tree, the Santa Barbara *Press* says: "Even our own people have a very inadequate knowledge, at least many of them, as to the growth and productiveness of the Almond. In the kitchen yard of Mr. Forbush stands an Almond tree which is only thirteen years old, and measures forty inches in circumference a yard from the ground, while it casts a shadow at noonday fifteen feet across, and the tree stands now twenty feet high. Last year it bore eighty pounds, worth $35; while this year it promises to bear eighty pounds worth $40. Quite a valuable shade tree, is it not? Yet how few have even one growing! So we said last year of this fine tree. It is now April 1st, 1871, forty-nine inches in circumference, twenty five feet high, and full of young nuts and blossoms."

Jute in the United States.—Mr. E. H. Derby, of Boston, writes to the Commissioner of Agriculture:

"It is obvious that Jute has been successfully introduced into this country, and that it flourishes in the moist bottom lands of the Southern States. I entertain no doubt that it will grow wherever the cane grows, on the moist soils of the South, and I believe that the India plant is best suited to our requirements. I trust you will urge your correspondents to preserve and circulate the seed which they have raised, and to plant it when they plant the cotton. If the Department of Agriculture had done nothing else, it seems to me it has earned all the Government has appropriated for it by introducing and acclimating this valuable plant.

I deem it almost as great an acquisition to the country as cotton itself. It yields one of the cheapest fibres nature produces. It is raised in India, and I presume it can be raised here for less than one-half the cost of hemp, and for one-fourth the cost of cotton. It has been produced in India for one cent per pound of fibre. It is woven not only into gunny cloth and gunny bags, but enters very largely into carpets and many kinds of tissues. In India jute has been steadily gaining upon cotton. England has imported from India of this article more than 120,000,000 pounds in a single year; and we last year imported more than 19,000,000 pounds, which cost more than $3,000,000, and sold at the South for $5,000,000. It is used there chiefly to envelop cotton. If we had diverted that amount of labor from cotton to jute we might have raised a much larger quantity at home, and at the same time have increased the value of our cotton crop. The jute seems to me to be a plant admirably adapted to the wants of the South. The South requires it for bale cloths, also to divert labor from cotton, and to employ the operatives during inclement seasons in the manufacture of cloth. I presume that the mechanism used in Kentucky, for spinning and weaving hemp, will be appropriate for jute."

Suffocating Squirrels.—Many hundreds of persons who have suffered loss by the countless numbers of squirrels which infest their lands, will appreciate the following from the Contra Costa *Gazette:*

"We are told by Dr. Carothers that he has lately been trying, with complete success, a method of destroying squirrels by suffocation, which we believe has been tried with satisfactory results in Santa Clara and some other localities. The method of procedure adopted by our informant is somewhat as follows: A liberal sprinkling of dry sulphur is spread upon a piece of old bagging of suitable size, and as much coal oil poured carefully over it as the sulphur and cloth will fairly hold without dripping. The cloth is then lighted at the mouth of a squirrel hole, and thrust in with an iron rod as far as it may be practicable, the combustion being maintained and the smoke and fumes driven downward from the mouth of the hole. After sufficient time is allowed for the combustion of the charge, the mouth of the hole is well stopped with earth, and also the mouths of any other holes

from which smoke is issuing, indicating an underground connection. The stoppage of the holes will not only retain the poisonous fumes, and make the work effective, by excluding the restorative elements of the atmosphere, but will be likely to defeat any such effort as a partially suffocated squirrel might make to escape from the death doom of a poisonous dungeon. He has not found, out of several hundred holes, a single one that has been re-opened since it was stopped with earth, after the sulphur and coal oil fumigation; and he believes it the cheapest and most certain mode of destroying squirrels that has yet been discovered."

Boring an Artesian Well through a Salt Marsh—Fresh Water obtained!—An experiment has been successfully tried in irrigating the salt marsh and tule lands. It has been adopted on the property of Mr. John Reagan, proprietor of the California Restaurant, on Montgomery Street. The lands are situated on the Petaluma and Lakeville Creek, about four miles from Lakeville. Mr. Reagan has reclaimed four hundred acres, and wishing to irrigate a small orchard, started to bore an Artesian Well for the purpose, about nine days ago. When reaching a depth of sixty five feet, a stream of water began to flow. This was stopped by inserting a close-fitting pipe to a depth of one hundred and seventy feet, which was subsequently replaced by a perforated galvanized pipe. The earth excavated by the borer was mingled with decayed vegetable matter. When at a depth of one hundred and ninety eight feet, a stream of pure fresh water began to flow, about an inch in diameter. As Mr. Reagan wished to obtain an eight-inch stream, the workmen tried to exhaust the water by using a six-inch pump; but after four men had labored on it for a day, they were only enabled to lower the water eleven feet, and on stopping work it ran over again. The boring apparatus was applied a third time, and at the depth of two hundred feet a piece of bark was ejected from the pipe. The cost of boring has been four dollars a foot, including the pipe, etc. This experiment will prove of great service to those who own tule lands throughout the State.—*Call.*

Ramie Production.—Mr. William Hall, President of the "Ramie Plantation Company of Louisiana," states that great improvements have very recently been made in the machinery for preparing the Ramie. The plant may now be cleaned on the field, the refuse being left for manure. The fibre is then dried, becoming comparatively pure, white, and silky, divested entirely of gum, and prepared for baling and for spinning. The improved machinery was, unfortunately, not perfected till late in the season, when the ramie had become harsh from a growth of eight months, the tops having been partly killed by frost. It was therefore found impossible to produce the fibre in bulk this season. With these improvements, and one laborer to clean the product of ten acres, Mr. Hall thinks one acre will yield at least two tons, making a product of twenty tons to the hand, estimated to be worth $200 per ton.

Two joint stock companies for the planting and manufacture of Ramie have been organized in Louisiana, one with a working capital of $45,000, the other with a capital of $165,000.

The Grape Sugar Industry.—The manufacture of Grape Sugar has assumed large proportions. In Germany there were in 1868 sixty establishments in operation, which produced that year 22,000,000 lbs of syrup, and 8,800,000 lbs of sugar. Since that time other and more extensive factories have been established, and a large extent of territory is now being planted with potatoes for that purpose. The potato plantations are usually in sandy districts adapted to their growth. The method pursued, is nearly identical in all the refineries. The wet starch is first put into a large washtub, where, under constant stirring for an hour, it is entirely dissolved in water and diluted acid. From the washtub it is run

into vats where it can be boiled by steam; there it remains, for sugar four or five hours, for syrup two or three hours. It is then put into the neutralizing tanks to be treated with lime, and left until the sediment—chiefly composed of gypsum—has settled, this usually requires six hours. The sweet liquor thus obtained is evaporated in vacuum pans, filtered and manufactured into syrup, or is left to crystalize, in case sugar is to be made. The process does not essentially differ from that pursued in the United States, where corn starch is chiefly employed. The great increase of the wine-growing districts in America has occasioned an enlarged demand for glucose, and the manufacture of this article appears destined to assume large proportions in the United States, where corn can be obtained in an unlimited quantity,

Journal of Applied Chemistry.

The Daisy and its Varieties.—The Daisy, so frequently mentioned in the books and journals of England, is almost unknown in this country, while in England, it is a common and annoying weed in lawns. It here requires no small amount of care to cultivate it successfully. What is popularly known with us as the Daisy is a very different plant from the true Daisy. Our meadows—at least in the older portions of the country—are every summer white with what is in some parts called Daisy, and in others "Whiteweed." This is *Leucanthemum vulgare*, and its proper name is Ox-eye Daisy. The European Daisy is *Bellis perennis*, and is quite different from our troublesome plant. The true Daisy is found all over Europe, excepting in the extreme north. In its ordinary form, it is a small white single flower, with a yellow centre. It has produced a number of varieties, the double white and pink being the best known among us. A curious form in which the head of flowers produces other flowers is known in England as "Hen and Chickens," and in France as "Mother and Children." Still another variety has the leaves finely veined with golden yellow, and marked. A well-grown plant makes a very handsome appearance. The great trouble in growing the Daisy in this country is the intense heat of our summers, and it is useless to attempt its cultivation unless shade can be afforded. It is a plant which forces readily, and is always to be found in our city markets in early spring, among the numerous things that are offered for sale by suburban gardeners.

The genus *Curcuma* is known as furnishing the yellow powder called *Turmeric*, which is used as an aromatic ingredient in the preparation of curry powder, and also in various branches of Eastern cookery, as well as in medicine, and as a coloring matter and a test for alkalies. The young tubers, which are colorless, also yield a kind of arrowroot, that known as East India arrowroot being the produce entirely of species of this genus, such as *C. angustifolia*, *Roxb.*, *C. rubescens*, *Roxb.*, etc. In Borneo, *C. purpurescens*, *Bl.*, is a common plant, and the older rhizomes are dug up, beaten to pieces, and washed to separate the farina from the fibre. The powder is not only used in the preparation of native dishes, but, mixed with water and perfumes, it is smeared over the faces and bare arms and necks of brides and bridegrooms when they sit in state before marriage, or receive their first visits of ceremony. Perhaps our perfumers may take a wrinkle.

How Rain is Formed.—To understand the philosophy of this phenomenon, water being essential to the very existence of plants and animals, a few facts, derived from observation and a long train of experiments, must be remembered. Were the atmosphere everywhere, at all times, of a uniform temperature, we should never have rain, hail or snow. The water absorbed by it in evaporation from the sea and the earth's surface, would descend in an imperceptible vapor, or cease to be absorbed by the air, when it was once fully saturated. The absorbing power of the atmosphere, and consequently its ca-

pability to retain humidity, is proportionately greater in cold than in warm air. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher we ascend from the earth, the colder we find the atmosphere. Hence the perpetual snow on very high mountains in the very hottest climates. Now when, from evaporation, the air is highly saturated with vapor—though it be invisible—if its temperature is suddenly reduced by cold currents descending from above, or rushing from a higher to a lower altitude, its capacity to retain moisture is diminished, clouds are formed, and the result is rain. Air condenses as it cools, and, like a sponge filled with water and compressed, pours out water which its diminished capacity can not hold. How singular, yet how simple, is this arrangement for watering the earth!

Scientific American.

Osage Hedges.—The whole secret of raissing a perfect Osage Hedge consists—first, in properly preparing the ground; second, in setting out none but plants well started; third, in puddling the plants, setting with a spade and tramping the dirt down as you go along; fourth, in close cultivation; fifth, in covering up well in the fall; sixth, in keeping the ground mellow the second year, and again putting straw on each side of the hedge in the fall. By observing these rules you will have a start for a fence that will be the admiration of all—and will afterwards make a fence in spite of you, and a substantial and permanent one at that—one which will not rot down, burn up, or break like wire; nor will it have to be renewed every ten years at a cost of one dollar or more per rod; but will, if kept properly trimmed, ever be a "thing of beauty," as well as of service.

Prairie Farmer.

New Blackberry.—The *Sable Queen* is a new Blackberry just brought to public notice. Its size, beauty and productive qualities are superior to the Lawton and Dorchester. It originated in Exeter, Massachusetts. The *Horticulturist* says of it: "The flavor is excellent, pleasant, and sweet, entirely free from the acidity of the Lawton, and, as it is a very late variety, it will be a valuable market fruit."

A Test for Water in Milk.—It is, as is well known, a remarkably difficult matter to detect water in milk, so as to say for certain that it has been added. A test which appears likely has been devised by Dr. A. E. Davies, F. C. S. Such a test he believs, we have in the specific gravity of the serum, or liquid portion of milk, from which the caseine and fat have been removed by coagulating and straining. The gravity of this liquid he has found to be remarkably constant, ranging, in that obtained from genuine milk, from 1.026 to 1.028; and, by carefully ascertaining the specific gravity of the serum of genuine milk diluted with various quantities of water, we may obtain a standard of comparison which will enable us to say, within a few per cent., what quantity of water has been added to any sample of milk that may come under our notice.—*Chemical News.*

CENTRAL PACIFIC RAILROAD.

Passenger, Sunday Excepted	Express Train Daily	***May 1st,*** 1871.	Express Train Daily	Passenger, Sunday Excepted
4:00 P. M.	8:00 A. M.	San Francisco	5:45 P. M.	12:30 P. M.
4:42 "	8:40 "	... Oakland ...	5:12 "	11:58 "
	7:30 "	...San Jose...	5:40 "	
7:58 "	12:15 P. M.	... Stockton...	1:43 "	8:35 "
9:35 P. M.	2:10 "	..Sacramento..	11:15 A. M.	7:00 A. M.
	4:10 "	.. Marysville..	9:10 "	
	9:00 "	Sesma.....	4:20 "	
EASTWARD.				WESTWARD.
	2:20 "	..Sacramento..	11:45 "	
	5:25 "	 Colfax	8:45 "	
	1:15 A. M.	 Reno.....	1:00 "	
	9:10 "	.Winnemucca..	4:05 P. M.	
	12:00 M.	.Battle Mount.	1:25 "	
	4:40 P. M.	 Elko.	8:45 A. M.	
	6:10 A. M.	Ogden	5:15 P. M.	

OAKLAND BRANCH.—**Leave** San Francisco, *6 50, 8 00, 9 10, 10 20 and 11 10 a. m., 12 00, 1 50, 3 00, 4 00, 5 15, 6 30, 8 30 and *11 30 p. m. (10 20, 11 10 and 3 00, to Oakland only.)

Leave Brooklyn, *5 15, *6 30, 7 40, 8 50 and 10 00 a. m., 1 30, 2 40, 4 55, 6 10 and 10 10 p. m.

Leave Oakland, *5 25 *6 40, 7 50, 9 00, 10 10, 11 00 and 11 50 a. m., 1 40, 2 50, 3 50, 5 05, 6 20 and 10 20 p. m.

ALAMEDA BRANCH—**Leave** San Francisco, 7 20, 9 00 and 11 15 a. m., 1 30, 4 00, 5 30 and 7 00 p. m. (7 20, 11 15, and 5 30 to Fruit Vale only.)

Leave Haywards, *4 30, 7 00 and 10 45 a. m, and 3 30 p. m.

Leave Fruit Vale, *5 25, 7 35, 9 00 and 11 20 a. m., 1 30, 4 05 and 5 30 p m.

* *Trains do not run on Sundays.*

T. H. GOODMAN, General Passenger and Ticket Agent. A. N. TOWNE, General Superintendent.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

VOL. I. JUNE, 1871. No. 8.

THE TUBEROSE, (*POLIANTHES TUBEROSA.*)

This highly esteemed bulb is a native of the East Indies, and is universally cultivated in the Orient.

Although, doubtless, all our readers have seen the flowers of the Tuberose, which are extensively used for fine bouquets, on account of their fragrance and their pure white color, but very few of them are familiar with the plant and its proper cultivation. Since it has been introduced into our gardens, we have heard of many failures in the attempt to cultivate it and to obtain a good flower stock. We shall give such information on the subject as will secure better results in the future.

The Tuberose is a bulbous plant, which produces a number of long, narrow leaves near the surface of the ground, and sends forth a flower-stock from three to four feet high, forming at its top a spike of fifteen to twenty five single or double flowers, which come into bloom one after another. The flowers are pure white, but sometimes we find the edges of a pale rose-color.

Although the Tuberose can be cultivated successfully in the open air, the flowers produced under glass are much purer and far more fragrant. While we advise their cultivation in San Francisco under glass, in order to obtain the very best flowers, we can recommend them for outdoor cultivation in such localities as Oakland, San José, Sacramento, and similar climates.

The first essential to success in bringing a Tuberose into flower, is a sound and well kept bulb of a matured size. It is not sufficient to keep the root in a warm temperature after planting; it should have been kept in a warm storeroom during the winter, and before being planted. If the bulb is permitted to lie in a cold, damp place during winter, the flower-germ is very apt to decay, and nothing will be produced except a number of leaves. The same result will follow if the roots are planted out too early, and lie in the ground for a long time before any signs of vegetation appear. A good flowering bulb should show a green heart, and if such a bulb is planted in a greenhouse or in the open air, after the season is well advanced, the leaves will make their appearance in about a month, and the flowers in about two or three months after that time. While in a growing state they should receive a good supply of water, which should be, if possible, of a moderate temperature. A subtropical atmosphere is the best and safest.

After the Tuberose bulb has done flowering, it will not flower again, and is therefore of no more use except to obtain offsets from; these are formed on the old bulb, and can be taken off, in the fall of the year, kept in a dry and moderately warm place during winter, and planted out in nursery-rows in the following spring; during the coming summer

many of these offsets will grow large enough to make flowering bulbs for the following year.

The ground around the Tuberoses should be well cultivated, frequently hoed, and kept entirely clear of weeds.

The bulb should be planted four inches deep, at least, in a well prepared and well manured soil.

The Tuberose can be forced at almost any time of the year, and a succession of flowers may be obtained in this way throughout the whole year.

When we take into consideration how much the flowers of the Tuberose are appreciated by the public, we would advise our florists to plant them consecutively, so that flowers may be obtained continuously.

The bulbs which are for sale here are imported annually, and as no one has yet undertaken to raise them on this coast, we must advise all who are in want of good flowering bulbs, to purchase imported ones in preference to all others. The only reason why bulbs should not be raised and cultivated here, is, that they can be imported cheaper than they can be raised.

EUCALYPTUS GLOBULUS (BLUE GUM.)

[From the German.]

This remarkable tree has lately attracted the attention of Botanists, Landscape Gardeners, and also of Medical men, Shipbuilders, Architects, etc., and promises to be of great importance. A native of Australia, the *Eucalyptus globulus* is now extensively cultivated throughout Europe. In its native country this tree grows from sixty to one hundred meters (199 to 328 feet), and in its other dimensions compares favorably with the Big Trees of California. The trees grow very rapidly, sometimes four meters (13 feet) within one year. Yet its wood is so durable and hard, that it is advantageously used in Australia for house and ship building, and is equal to the well known Teak-wood.

The blossoms and also the capsules, which are as hard as the capsules of the acorn, (much harder, according to our experience—Ed.,) contain an ætheric oil. The bark also contains a small percentage of this oil, and is spotted like that of the Platana.

The oil contains very remarkable qualities, which make it equal if not superior to that of turpentine. It does not undergo oxydation as quickly as the former. If taken as medicine, it is worked off through the lungs, and is therefore used very effectively in cases where the breathing organs are affected.

In Spain the oil already appears in commerce, and has been well known in that country for some time. It is used there as a preventive as well as a cure for fever. Its application for this purpose is rational, as the oil of the *Eucalyptus* is a powerful stimulant; its effect is similar to that of alcohol and the well known pepper.

A peculiarity of this tree is, that the leaves are broad during the first three years, but assume after that the appearance of those of some Willows. In Europe great efforts have been made to acclimatize this beautiful tree, and in the southern part of France the experiments have been very successful. The *Eucalyptus globulus* can be seen in Paris, and although under protection now, it is believed that the tree will thrive there in the open ground in sheltered places.

In Nizza the *Eucalyptus* has been planted for shade trees along the principal promenades, and the people also make use of the tree for medical purposes. For persons whose lungs are affected, the powder of the blossoms is very good and effective. A patient who had taken four grammes daily, felt much improved after a very few days; the expectoration was easy and copious.

In Central Europe and in the same latitude of America, this beautiful tree with its bluish-green color would make a very desirable ornamental tree, and on account of its rapid growth it is preferable to many others.

Although an immense tree its seeds are very small, and must be planted in pots or boxes under glass. The young trees are protected in cold houses during winter, and the following spring, when they have attained a

height of several feet, they are planted in the open ground. In the coming autumn they will have attained a height of eight to nine feet, and they have a very good effect as single specimens on the lawn.

The tree does well in any ordinary soil, but thrives best in a deep, light loam. For the South of Europe and the North of Africa it will become a tree of great practical value and importance in the course of a few years. In Toulon this *Eucalyptus* is cultivated in order to cover the rocky hills which surround the city. The young trees have been planted four feet apart, so that they may protect each other against the high winds. From Nizza to Marseille, and also in Algère thousands of the *Eucalyptus globulus* have now their existence. They are also cultivated in the gardens of the Viceroy of Ægypt, where a much faster growth has been obtained by scoring the bark perpendicularly. This method has the effect of removing all obstacles to the rapid increase of the body of the tree.

OUR CALIFORNIA BULBS.

California is rich in many kinds of bulbous roots, some of which deserve to be placed in the highest rank with those from other countries.

Early in spring the different varieties of *Brodiæa* make their appearance, and some of them should have a place in every collection. The first one in bloom is the *Brodiæa congesta*, of a purplish-blue color; next comes the *Brodiæa coccinea*, a very worthy plant, and the *Brod. grandiflora*, the flowers of which are of a beautiful fine blue, resembling in color and size of flowers the well-known *Agapanthus*. All of these are easily removed, and well adapted for forcing under glass.

Another beautiful family is the *Cyclobothra*, of which we have several colors and varieties —the white, the yellow and the light purple. These grow about two feet high.

The *Calochortus* is now in bloom, and the flowers are certainly beautiful gems; some of them yellow, with dark blotches towards the centre, while others are of a white, marked with dark blotches.

The *Seubertias* are also favorites with us and growing something like the *Brodiæa*, resembling their flowers, also, to some extent.

We have the *Frittillarias*, the *Lilies*, and many other bulbous roots, hardly recognized as yet by our California florists, but we are in hopes that very soon the cultivation of California bulbs will be taken up by our amateurs as well as by our practical gardeners.

We shall endeavor to give a description of the different varieties of bulbous roots as we may be able to obtain fair specimens of the flowers.

ORCHID CULTURE.

The June number of the ever welcome *Gardener's Monthly* has a beautifully executed frontispiece, representing the *Dendrobium nobile*, of the Orchid family. This class of plants is very little known in California as yet, and as no one denies the peculiar attractions these plants offer, we copy the following from said Magazine:—

"The *Dendrobium nobile*, we may say, for the information of those not well learned in the higher branches of Horticulture, belongs to the *Orchid* or Air-plant family. This species is a native of the East Indies; but orchids are found in all regions from the arctics to the equator. There is, however, a great difference in their habits in different temperatures; for though in the tropics they are mostly "air" plants, as we get further north the number of those which live in the earth greatly increases. Those which grow on trees or stumps are called *Epiphytal* orchids, and those are *Terrestrial* which live in the ground. Those which live on trees, simply attach themselves by long, worm-like roots, and probably derive but little support from the dead matter among which the roots run. They live chiefly on the air and moisture, of which this half-dead matter about old bark affords a pretty regular supply.

The Epiphytal orchiæda do not extend far into the United States. There are two found in Florida—*Epidendrum conopseum* and *E. venustum*. In our northern States the handsomest orchids are the Moccason flowers, (*Cypripedium*,) but these are becoming very scarce. Indeed orchids are seldom very plentiful anywhere, as the flower is so constructed that it cannot fertilize itself, but is dependent wholly on external aid. It is to Mr. Charles Darwin we owe this knowledge. His work "*on the fertilization of orchids*" will probably be one by which he will be remembered longest. It completely reversed old opinions. It was thought most plants had arrangements especially adapted to self-fertilization. Writers on the *Fuchsia*, for instance, were sure to tell us that the flower was made pendulous especially that the pollen might easily drop on the stigma; but now it is universally conceded that plants in general avoid self-fertilization, and in some cases, as this of orchidæa, it is impossible to be fertilized at all without insect aid, which carries the pollen from one flower to another. Mr. Darwin's theory of the "origin of species" may not ultimately be accepted, but this on the fertilization of orchids will always mark a great historic phase in Botany and Horticulture.

Orchids are peculiarly interesting to the plant cultivator, from the fact that almost all of them are delightfully fragrant, while most of them have particularly handsome flowers. These flowers seem to delight in simulating the forms of the insects which aid in fertilizing them. Some are like bees, others moths and butterflies, and some like birds. The Dove plant of Panama is so called from the resemblance of the flower to this bird; and "Flower of the Holy Ghost" follows from this in the natural habit of Spanish-America to associate such resemblances with their spiritual ideas.

Their peculiar service in the economy of nature from a human standpoint is not clear. With the exception of the *Vanilla Bean*, which is the seed vessel of an orchid called *Vanilla planifolia*, they are of no immediate service to the wants of mankind, as we usually understand them; but if we believe that human wants are not limited to food and medicine and raiment, but that the mind was destined to crave for the lovely and the beautiful, as the "hart panteth after the living waters," surely these wonderful flowers are amongst the choicest necessities of life.

As for their cultivation, it is not near as difficult as it was once supposed to be; though to be sure, if one wishes to excel in their culture, the highest skill is requisite. Thousands, for instance, could grow the Dendrobium nobile we have figured; but not one in ten thousand could grow it as a Newett or a Taplin has done.

In former times the orchid house was a very expensive affair. A thousand dollars was but a drop in the bucket. Hot-water, tanks, peculiarly constructed glass, and, we know not what, were thought to be essentials. In such places orchids were "coddled;" but now it is enough to hang them from the rafter of any well constructed greenhouse; and if the plants in winter do not get a temperature lower than fifty-five, they will for the most part grow and do well.

POPULAR BOTANY.

CHAPTER VIII.

In this chapter we shall continue the consideration of the leaves, their mode of development, and the relation which they bear to the rest of the plant. We have before said that a part of systematic Botany is founded upon the form of the leaves; which form, we now state, is dependent upon the arrangement of the veins (woody fiber) and the amount of cellular tissue which the leaves contain.

Leaves are divided into simple and compound. In the former, there are no articulations but the one at their insertion into the stem, or they are composed of but one piece, which may be entire or divided into numerous forms. The latter, on the other hand, have a

number of articulations besides those at their points of insertion into the stem, or at times we find them to be made up of several leaflets each of which are attached to the stem by a separate petiole or leaf-stalk. During their first period of growth, all leaves are simple, and it is only in the after development that they assume the various divisions.

If the cellular part of a leaf is developed in a regular manner, on both sides of the mid-rib, (which it will be remembered is only the prolongation of the petiole through the center of the leaf,) it is said to be *equal*, while if it is not so developed, having more upon one side than on the other, it is termed *unequal* or *oblique*.

A leaf to be *entire* must have its margin even and without divisions; while if the cellular tissues project beyond the margin, the leaf is *not entire*. If these projections are irregular and more or less pointed, the leaf is then said to be *dentate* or toothed; when the points are so arranged as to present somewhat the appearance of saw-teeth, the leaf is called *serrated*, and when they are rounded, the leaf is termed *crenate*.

All these terms have reference to the margin of leaves only, and therefore another class are used when the divisions extend beyond the margins into the blade of the leaf. As when the leaf is cut in an irregular manner, deep into its blade, it is said to be *incised*, but when these divisions bear somewhat of a regular character the leaf is said to be *lobed;* thus we have two-lobed, three-lobed, five-lobed, etc., to express into how many parts the leaf is cut. When the incision extends to the center of the leaf, or even deeper, it is then said to be *cleft;* and we express the divisions in the same manner as we did in the case of the lobes, two-cleft, three-cleft, etc. When the segments extend very near to the base of the leaf, or to the mid-rib, it is said to be *parted;* and if they reach the base or rib, the leaf is then termed *divided*. To designate this form we have the terms two-parted, three-parted, etc., as in the previous cases.

When we come to examine the division of leaves, we find that it depends somewhat upon the arrangement of the primary veins; the divisions and lobes of a feather-veined leaf being unlike those of a radiated one. In the former the divisions pass towards the mid-rib, and in the latter they are (at least the main ones) directed to the base of the leaf. By uniting the terms applicable to the divisions with those used to designate the venation, botanists are enabled to describe in a concise manner the form and character of a leaf.

Leaves that are feather-veined, *(pinnately-veined,)* that is, having a well marked mid-rib which runs directly through the center of the leaf-blade, from the petiole to its apex, with lateral veins passing from the petiole to the margin—when divided by fissures or sinuses reaching half way to the mid-rib, are called *pinnately-cleft*, or *pinnatifid;* when the fissures almost reach the mid-rib, they are said to be *pinnately-parted*, and when they extend to the mid-rib, they are termed *pinnately-divided*. A pinnately-parted leaf having regular and numerous divisions is said to be *pectinate*, from its resemblance to the teeth of a comb; feather-veined leaves more or less pinnated, with the lobes lessening in size at the base, are called *lyrate*, or lyre-shaped, while a lyrated leaf with sharp lobes which point towards the base is called *runcinate*.

Palmately-veined or radiated leaves, are those having radiating venation, and the several fissures or divisions being united by an expansion of cellular tissue, giving them somewhat the appearance of the palm of the hand. When these leaves are divided by fissures, clefts, etc., they are said to be *palmately-cleft*, *palmately-parted*, and so on, as in the cases before mentioned.

Leaves are said to be *orbicular* (from *orbis*, a circle) when the stalk occupies the center, and the veins spread on all sides of it at right angles, being united by the cellular tissue; if, however, the stalk or petiole is not in the center, but to one side, the leaf is called *peltate*, (from *pelta*, a buckler.) The leaf of the Castor Oil Plant is an example. A *linear* or *acicular* leaf is one where the veins do not

spread out, but pass at once from the base of the leaf to its apex, having but a narrow connecting strip of cellular tissue; the Pines and Firs belong to this class. If the veins are so disposed that those in the middle are the largest, and those at the base and apex are shortened as they approach their respective ends, the leaf is then termed *lanceolate*, (*lancea*, a spear.)

An acute leaf is one that ends in an acute angle, but when the apex terminates in an obtuse angle, or is rounded, it is called *obtuse;* and an obtuse leaf, when the apex is slightly indented in the middle, is termed *retuse*, and if more strongly cut, *emarginate*. An obovate leaf having a pointed notch at its apex is called *obcordate*. If the apex is cut by a straight line, it is then said to be *truncate;* but if it terminates by a small projecting point, it is *mucronate*.

The following terms are employed in Descriptive Botany chiefly to denote the modifications of surface of leaves; they are, however, applicable to the surface of any other organs:—*Glabrous*, smooth, denoting the absence of all hairs or bristles; *Pubescent*, covered with soft hairs or down; *Rough*, with hard, short even points; *Pilose*, with short, weak thin hairs; *Hoary*, white, with very short dense hairs; *Villose*, with long thin hairs; *Woolly*, with long dense matted hairs; *Tomentose*, with dense, short and rather rigid hairs; *Rugose*, the tissues between the reticulated veins being convex from its superabundance; *Punctate*, dotted with pellucid glands.

The Rose.—The oldest Rose bush is said to be one which is trained upon one of the sides of the Cathedral of Hildesheim, in Germany. Its age is unknown, but documents exist proving that a Bishop Hezilo, near one thousand years ago, protected it by a stone roof, which is still extant. The largest Rose bush is a white Banksia, in the Marine Garden at London, which was sent there, the first of its kind, in 1813, by Bonpland. Its numerous branches, some of which measure eighteen inches in circumference, cover an immense wall to a width of nearly sixty feet, and, at times, in early spring, as many as fifty thousand flowers have been counted on this queen of Roses.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION VIII.

In our former numbers we have offered our ideas on the manner in which a garden should be formed, which we have elected to call a fourth-rate—i.e., of small dimensions, and connected with a city residence, where ground is valuable, and where building lots are of small area.

In laying out and fitting up around a country residence for similar purposes, many new ideas would suggest themselves, and many new features would naturally be introduced. The objects in making a home in the country, instead of in a large city, are manifold. One prefers the country on account of its purer air; another for the rural scenery; another that he may raise his own vegetables or his own fruits there. Many, however, seek the country because they desire more room, and don't like to be crowded into a small city lot.

If the principal object in selecting a country residence is pure and fresh air, and the principal consideration is health, the operations recommended for a city residence of the fourth class would not need much modification for a residence of a similar class, excepting that, as the garden would very likely be larger, it would admit the planting of a larger number of ornamental trees. The preparation of the soil, the selecting of plants, and the general management of beds, walks and borders, would be nearly the same. If the place be exposed, it may necessitate the planting of screens, or the grouping of ornamental trees in such a manner as to protect the ground which is intended for the more delicate flowers, or which may be frequented by the inmates of the house.

The ground occupied being more extensive, the walks should be wider, say from six to eight feet.

The trees best adapted for screens, and at the same time which make a good appearance as ornamental trees, are *Cupressus macrocarpa* (Monterey Cypress), *Pinus insignis*,

Libocedrus decurrens, *Thuya gigantea*, *Ficus*, *Eucalyptus* (this should be cut back when young, so as to throw out more lateral shoots near the ground), *Acacia lophantha*, *A. armata*, *A. linearis*, *A. mollissima*, all of which are evergreen, and some of them produce good flowers.

The deciduous trees adapted for the same purpose, and equally as good for ornament, are: Locust, Ash, Maple, Oak, Black Walnut, Elm and California Buckeye, Laburnum, Chestnut, Catalpa, Ailanthus and others.

But in selecting a home in some rural district, there are generally other considerations, such as the raising of vegetables for home use, the planting of a small Orchard which shall furnish the table with fresh fruit, and a small assortment of Vines, which may help to make up a variety. These features may be introduced as extensively as the ground occupied will permit. It is hardly necessary for us to say that the Vegetable Garden and Orchard should be situated in the background, so that the flowers and ornamental trees and shrubs may occupy the front garden; unless the ground is very extensive, when the Vegetable Garden may be located on one side and a small Vineyard on the other, while the centre should be devoted to flowers, shrubs and trees, and the background to the Orchard. In this case, however, we should advise a separation of the kitchen garden and vineyard from the ornamental grounds. This may be effected by the grouping of shrubs and trees, in such a way as not to remove the impression that all is one.

An arrangement of this kind would not be admissible on the grounds of a first-class residence, and our readers must bear in mind that we are now confining ourselves to a rural residence where a limited amount of capital is employed to furnish those necessaries of life and that comfort which cannot be had in a large city for the same amount of money, and where the productions of the soil will fully compensate for the loss of time in traveling a greater distance to the place of business.

If, in the fitting up of a country residence, no other considerations exist than pure air and variety of scenery, the locality should be selected in accordance with this desire; but where it is expected that the soil should furnish variety for the table, a sheltered and warm situation must be obtained. Fruits and vegetables of good quality require a certain amount of warmth, which the climate of San Francisco does not afford; although we admit that some few varieties of vegetables are grown to perfection in its immediate vicinity.

BAY DISTRICT HORTICULTURAL SOCIETY OF CALIFORNIA.

The ninth regular meeting of this Society was held at the rooms of the Academy of Sciences, No. 622 Clay street, on Saturday, May 27th.

After the transaction of the regular business, Mr. G. M. Miller was proposed as a new candidate for regular membership.

It was resolved to hold a special meeting on the second Saturday of June, for the purpose of incorporating the Society.

The seed of the Juniper growing near Mount Diablo was offered gratuitously to members of the Society, by the President, Professor H. N. Bolander. The same gentleman made an interesting statement based upon personal observations, in regard to the cones of the *Pinus Coulteri*. Heretofore it was generally believed that the cones of this pine never opened; however, Mr. Bolander now finds that they open in the third year, and discharge their seeds.

Lectures on the Coniferæ.

At this meeting Mr. Bolander completed his remarks upon the Coniferæ of California, and commenced with the *Juniperus occidentalis*, which is found growing in the northern part of this State. This tree is most beautiful in appearance, attaining a height of 25 to 40 feet, is seven feet in diameter, and tapers very rapidly. It thrives well in the higher

mountains, stands mostly isolated and scattered, and deserves extensive cultivation.

The *Juniperus* which grows near Mount Diablo is without a name as yet. It does not exceed 15 to 20 feet in height, its foliage is of a light green color, and it combines every quality to make it a valuable ornamental shrub for our gardens.

The *Juniperus pachyphlœa* is found in the southern part of the State. It is a large spreading tree, of fine appearance, with a very glaucous foliage. It is well worthy of cultivation.

The *Juniperus communis* grows extensively in Oregon and in the extreme northern parts of this State. It is a low, spreading shrub, and of very little use.

The *Cupressus macrocarpa* (Monterey Cypress) is found in Monterey county exclusively, and it is there confined to the locality called "Cypress Point." The tree is spreading, its branches overhanging each other, and forming a dense mass. It grows fifty feet in height. This *Cupressus macrocarpa* is so well known here, and so extensively cultivated, that it is unnecessary to give a full description. It is one of the easiest cultivated, and is in many respects a deserving tree.

The *Cupressus Goveniana* is found in Monterey and San Diego, it growing from five to ten feet high. Small trees, of from six to seven inches in height have been found cone-bearing.

Another *Cupressus*, which is found near Mendocino, is as yet undetermined.

Also the *Cupressus* growing near Clear Lake, is in want of a name and full description.

Mr. Bolander now proceeded to describe the—

Torreya Californica, (Nutmeg,) which is found near Ukiah and in Marin County, [also near Napa—Ed.] The foliage is very large and of a shining dark green color. The berries, are as large as a pigeon's egg, and are enclosed in a husk. The nut resembles the well known Nutmeg.

The *Taxus brevifolia* (Yew) is a beautiful evergreen, growing near the Coast Range and on the Sierras two thousand feet above the level of the sea. This graceful tree, with its light, vivid green foliage and its drooping branches, grows to the height of thirty feet. The berries containing the seeds are, when ripe, of a red color. It is a tree worthy of very extensive cultivation.

Ephedra antisyphilitica is a new species, resembling the well known *Cytisus;* it is a spindling growing shrub of from five to ten feet high, and found principally near San Diego and Mono Lake.

This concluded the remarks of Professor Bolander upon the *Coniferæ* of California. He enumerated in all thirty-four different and distinct trees.

The speaker announced his intention of describing the Oaks and other deciduous trees of California at our next meeting.

WORK FOR JULY.

The Grain Fields keep the farmer hard at work, and little can be done for Horticulture except where it is made a specialty.

Wherever irrigation is available, water should be made use of during the coming month. For young Orchards and Vineyards, if mulched, one or two good waterings are quite sufficient to insure success. Where mulching has not been adopted, a good watering once a-month will meet all requirements. In case of very rapid growth, it will be advisable to score the bark lengthwise so as to allow the trunk of the tree to expand. This treatment is said to be very beneficial for Cherry, Peach and Plum trees.

In small Orchards, where the principal object is the production of large and well-developed fruit rather than quantity, the trees must not be permitted to be overloaded, and the time is well employed in picking off and thinning out the young fruit, wherever they would overtask the strength of the tree. The same rule applies to Grapes, when quality is considered of more importance than quantity.

The fruit crop of this year will be larger than ever before. The strawberry season has been very satisfactory; prices were low, but the quantity made up for it. They are now on the decline. Cherries are now in full season, and retail at from 15 to 50 cents per pound. Gooseberries and Currants are becoming plentiful, and the latter are very fine. Apricots have made their appearance, but so far nothing but inferior fruit has been offered.

In the Kitchen Garden, continual watering and frequent hoeing are the best stimulants to good growth. Late Peas might be sowed now, and Cucumbers for pickles can be planted yet. Keep everything free from weeds. The flower garden affords much enjoyment at the present time, and although the Roses have ceased to be the leading feature, they still add much to the brilliant display of the Carnations and other Pinks; though the Pansies are less attractive during the warm weather, they yet form a beautiful contrast to the Lobelia and Nemophila. The Verbenas are in their glory, and the Petunias and Pelargoniums add much to the attractions of the flower garden.

In the latter part of July, layers and cuttings may be made of the different varieties of Pinks.

Cineraria Seed should be gathered as they are going out of blossom, and the best varieties should be selected for that purpose.

Annuals require particular care yet; frequent watering and hoeing is necessary to insure success. The watering is better done with the watering-pot, as the hose is apt to injure or destroy the young plants by its forceful stream.

During the coming month the propagating of plants is the principal work for Florists in the East and Europe. Here we do not confine ourselves so much to any particular time, yet this and the coming month is a good time to propagate many green-house plants by cuttings, and all soft-wooded plants, such as Geraniums, Pelargoniums, Fuchsias, Heliotropes, Petunias, etc., will be ready for market next winter and spring. The month of July is also favorable for the propagation of Pinks, by layers or slips.

Graperies must be watched very closely to keep them free from insects, and the berries should be thinned out in order to obtain well-developed fruit and well-formed bunches.

To keep a lawn in good condition, it should be mown at least once a-month; and if it can be done twice, it will be so much the better. The walks leading through the Ornamental Grounds should be kept clean and free from weeds.

GORSE (FURZE) AS FOOD FOR STOCK.

The *Ulex Europœa;*—European Furze, Whin, or Gorse—is a branchy, spinous shrub, evergreen, with yellow flowers; it grows freely in any dry soil, and is readily propagated by seeds, or by cuttings planted in sand. There are several varieties, as the—*Ulex Europœa*, of England and Scotland; *U. Nana*, Britain and France; *U. Provincialis*, Provence, France; and *U. Stricta*, Ireland. The latter sometimes grows to the height of ten feet; it is easily propagated by cuttings; is spineless; the branches are soft and succulent; sheep and cattle are very fond of it. We believe this shrub would be found very useful for fodder if planted in any rough, coarse, dry spot on a farm. It is useful for hedges as well as for fodder for cattle. We subjoin a few extracts from the *North British Agriculturist*, hoping they may be found worthy of attention.

"For several years Gorse has been cultivated to a considerable extent by many persons in Ireland, and its use as green food for horses and cattle, and as a substitute for Hay during winter and spring—not 'during the summer and autumn,' as stated in your reply—is steadily extending in that part of the kingdom. It is just possible that some of your readers may not think the more highly of the practice because it is followed in Ireland—like the men of old, who thought that no good thing could come out of Galilee. But when Gorse is cultivated in

Ireland, it is not by the ordinary class of farmers. It is chiefly found on farms where there is nothing to be ashamed of in the shape of management; and I know that some who grow it in Ireland, and prize it highly, are Scotchmen and Englishmen. I have also seen Gorse grown in England for the same purpose, with much satisfaction to those who cultivate it.

The description of stock which thrive best upon Gorse are horses, milch cows, and young stock. When given to horses no Hay need be used, unless a little put in the rack the last thing at night. In fact, horses accustomed to Gorse, and getting it regularly during the winter as the chief part of their food, do not care much for Hay. It is well known that Carrots give horses a nice coat, but even Carrots do not surpass Gorse in this respect. I know that some do not give their horses as much Oats when feeding on Gorse as when fed on Hay, but I consider it more advisable that farm horses should get their regular allowance of Oats when fed on Gorse.

When milch cows are fully fed on Furze or Gorse, which is the same thing, certain results follow: the cows give more milk, and it is richer in quality than that yielded by them on ordinary food. But this is not all. The winter color, and too often the winter flavor of the butter is well known as something very different from the color and flavor of butter made during summer and early autumn, when the cows are out on good pasture. Now, the butter obtained at this season from the milk of cows fed wholly on Gorse has as rich a color and flavor as if the cows were grazing on the finest old pastures. This, I need scarcely say, is a very important point.

Store cattle getting plenty of Furze during winter keep good coats of hair, and are in fresh, forward condition for the Grass. I know a gentleman who feeds cattle for the butcher regularly on Furze and what you may call half Turnips. His cattle are much liked by the butchers who kill them, and on one occasion he showed a heifer, fed as described, at a show of fat stock held in spring, and took a prize, although opposed by exhibitors who had used both roots and cake freely.

What I have stated is not done on a limited scale, for I know of many instances where eighty to one hundred head of milch cows, young cattle and horses are fed on one farm, I may say, solely on Gorse—that is to say, with the exception of Oats for the horses. The Turnips are reserved for the fattening of cattle and sheep.

Gorse thrives on poor land. I have known it grown with success for years on land not worth five shillings an acre—but, of course, like everything else, it is most luxuriant on good soil. It is, however, a crop well suited for a poor soil, provided the land is dry, and made clean and fine before sowing the seed. The best manure to apply is Bone-dust, and next to that, Super-phosphate, but Bone-dust is preferable. The proper time for sowing is March or April, or even May, and the quantity of seed is from thirty five to forty pounds an imperial acre. Some sow less, but I invariably find the best crops where plenty of seed has been used. Oats are usually sown along with the Furze seed, but the Oats should be sown thin. The kind sold by seedsmen for sowing is called 'French Furze,' and it is believed to be finer than British Furze, although I confess I cannot perceive any marked difference.

The crop is ready to be cut for the first time eighteen months after the seed has been sown; that is, the crop grown from seed sown in April 1870, would be ready by November, 1871. After that it is a permanent crop, requiring only to be mown each year, and yielding every winter a large quantity of green food at a season when such food is not to be had, unless in the shape of roots. A friend of mine, now deceased, who had a large herd of valuable Short-horns, well known in the showyards, grew Furze on land worth forty shillings an imperial acre, with which he fed his cattle to a considerable extent, and his cattle had always a beautiful bloom on them in spring.

Old, self-sown Furze produces growths which may be cut off with a hook and given

to stock; but cultivated Furze is much superior, that is, when regularly cut, so that each year's crop consists of fresh shoots.

In preparing Furze for the use of stock, many persons are in the habit of putting it once or twice through a straw-cutter. This answers well enough for horses, but cows prefer it when better prepared, and the best machine for the purpose is Walsh's Bruiser, which was exhibited by Mr. J. Pringle, Victoria Street, Edinburgh, at the late show of the 'Highland and Agricultural Society.' In fact, wherever Furze is largely used, and power required, it is advisable to get Walsh's machine.

In conclusion, allow me to say, that if Furze had been a difficult crop to grow, its value would perhaps have been better appreciated. It is best known in the form of old bushes, which often occasion considerable trouble in the improvement of land, and this, too, may have led to the plant being undervalued; but I trust I have said enough to induce those who, like your correspondent, have poor land which they find difficult to turn to profitable account, to give some consideration to the subject."

Gorse Hedges.—Clean off Grass or any Weeds that may appear, loosening the soil with the hedge-spade where necessary. The plant ought to be more largely grown, for hedges and for a forage crop, than it is, for, grown on waste ground in rows, it affords both food and shelter for sheep at a season of the year when both are of the greatest value, and it is the best of our winter forage plants for milch cows.

Winter Keep.—Gorse will grow everywhere in France, except on chalk soils. It still covers large areas in Bologne and Brittany, and in the last named locality, the young shoots of the plants are frequently used as fodder for horses and cows. Where the Gorse is cut every year, and grows thickly, the scythe is the implement used to cut it.

In the case of old and detached plants, however, the shoots are best cut off with a sickle—the left hand being armed with a leathern glove or wooden fork. The Whin, before being given to stock, should either be bruised in a trough or cut by a chaff-cutter, and then, after remaining some time in water, crushed by a wooden pestle in order to destroy the thorns. The green shoots of Gorse thus prepared make a capital fodder.

DEEP PLOUGHING.

Few persons, even among practical Agriculturists, are aware of the depth to which roots of wheat, corn, oats, etc., penetrate the earth when placed in circumstances favorable to their full development. Careful measurements have been often made, and we have before us results which would be fabulous, were they not substantiated by actual proofs of the facts. Corn roots have been found to measure six feet in length and four feet in depth; Wheat, upwards of nine feet long; tap-roots of Cotton, six feet in depth. This of itself would suggest a sufficient proof that deep plowing and thorough pulverization of the soil are essential requisites in good farming. By deep plowing we must not be understood to mean a complete upturning of the subsoil to a depth of from fourteen to twenty inches, as this would prove of itself to be injudicious. Soils of shallow depth of surface soil, especially, must not have more than a couple of inches of their subsoil brought to the surface at once. A gradual increase in depth of tillage must take place, so as to enable the texture of the upturned subsoil to become well disintegrated by the influence of exposure to air and sun. For shallow soils, a turning plow running at a depth of eight inches is sufficient; but let this be followed by a subsoil running in the same furrow that will break and loosen the subsoil to a depth of from eight to ten inches more without bringing it to the surface. This may seem to many farmers a useless waste of time and of animal power, but it is really a difficult matter to make these same parties believe that deep plowing is one of the best preventives of drought. It is nevertheless a

fact that well subsoiled land is capable of furnishing more moisture to growing plants during dry weather than that which has been plowed shallow.

Routine has killed many operations and avocations, which for a little judicious observation of natural laws, would otherwise have proved successful. We have entered an era in which progressive knowledge alone can lead the farmer to success. We use the term in contradistinction to retrogressive knowledge, which, unfortunately, seems to be the rule in agricultural pursuits. It has been said that it was lucky for a man to be born late. If this is true, he should keep his knowledge on a par with the march of progress in sciences relating to his avocation in life, or better for him to have been born in the time of his grandfather.

We cannot forbear this little digression from our subject by noticing the almost general use of antiquated plows, which, for efficiency in their work, are scarcely better than the implement described by Virgil. At a recent plowing match, out of twenty-three plows entered, eighteen were of the primitive pattern, as used by the first settlers of the country. We make all due allowance for *necessity*, especially in an impoverished country, but the continued use of implements constructed against all rules of traction and scientific principles is injudicious, if not suicidal. The common rooter, half shovel, twister, or whatevef name is given to the old pattern plow referred to, is a more expensive implement, at a first cost of two or three dollars, than one of the late improved plows is at ten, or even fifteen.

The average depth of the work of this plow is not over *three inches*. Upon this pretense of plowing, a crop, and a good one at that, is expected to grow. The roots of the corn, when two weeks old, will reach the undisturbed subsoil; lateral roots are necessarily forced to grow in greater number than when the tap-root is enabled to penetrate the soil to a greater depth. The first drought of summer is immediately visible upon the crop. The whole root structure of the plant being superficial, all the moisture of the soil is absorbed by a few days warm weather. The waste of tractive power in these implements is incredible. More labor is required by the animal to even stir the ground at this shallow depth than would plow it well to a depth of eight inches, by using a plow constructed upon correct principles of dynamics.

Deep plowing is necessary to lay the foundation of any crop. It is much easier for man and team to spend a few days more, during spring or winter, in plowing the land thoroughly, than to devote this extra time in performing that operation in warm weather when the crop is growing. If the useless labor of trying to break up the land after the crop is planted was spent before planting, the result would be more to the advantage of the farmer. It is time that old-fashioned ideas should be abandoned. Filial duty does not require us to take pattern after our parents in all cases. If our grandfather's plows suited him and the ideas of his period, it is evident that the present era requires a different and improved implement, as well as a better system of husbandry in general.—B.

Farmer and Gardener.

OUR HAY CROP.

It is now believed that the Hay Crop of the present season will come fully up to the average. Wherever any doubt prevails as to the maturing of the grain, the fields are mowed down for Hay. It is well for our farmers to be on the safe side, yet we like to see them working for their own interest and their neighbors' a little more faithfully. During this last month we frequently saw farmers cutting their Hay and leaving it lie scattered for days and weeks to be bleached by the sun, by which treatment the Hay loses much of its strength and value, as well as of its sweetness. Hay should not be allowed to lie scattered on the ground any longer than is necessary for drying.

Another great mistake is made in cutting Hay too early or too late. The best time to

cut Grass is shortly after flowering, when it contains the largest amount of sugar, gluten and starch, and consequently is most nutritious. If Wheat, Oats or Barley is permitted to stand too long before cutting, the Hay will weigh heavier, and something is gained by the producer in the way of weight; but the quality of such Hay is much inferior, and the farmer will deceive himself as well as those who purchase from him. We regret to see so little difference made in the price of good and inferior Hay, and we do not see why a farmer should not receive a better price for his Hay cut in time and well managed, than one who goes about the business carelessly or ignorantly.

Copeland says, in regard to the cutting of grain for Hay: "Do not leave it till fully ripe; the straw should be yellow at the bottom, but not all along the stem. Try the grain, squeeze a kernel between the thumb and finger; if the contents squeeze out in a dry and mealy condition, it is fit to cut; if quite milky, it should stand longer. Barley and Oats may be allowed to stand later than Wheat and Rye, because they ripen more slowly and are less valuable."

NORWAY OATS.

A correspondent of the *American Agriculturist* writes:—"Last spring I got of Ramsdell & Co. one bushel of Norway Oats, for which I paid seven dollars, and sowed them on three-fourths of an acre of good, black flint loam; early in April, yielded twelve bushels of poor oats—as nice a swindle as ever was got up. To which the *Agriculturist* replies:—'We never had any faith in Norway Oats; but it is evident, in this case, that there was something wrong either in the soil or season. People swindle themselves when they imagine that there is any breed of animals or variety of plants that will give great returns without food and care. All that can be claimed for the Norway Oats is, that in favorable conditions of soil and season they give a large return of a somewhat inferior product.'"

PERMANENT MANURE HEAPS.

The best farmers are distinguished by the careful husbandry of manure. "Gather up the fragments that nothing be lost," is their motto. These are always saving the pieces, and looking out for next year. No sooner is the last of the old compost heap spread in the spring than they begin a new one upon the field next in rotation. A large supply of muck is the foundation of their perpetual manure heap. They mix the fresh manure with this as it accumulates. If they take a load of wood to market, they bring back a load of stable manure, butchers' offal, ashes, manufacturers' waste, oyster shells, or gas lime, to increase the heap of compost. The oyster shells are easily reduced to quick-lime, upon a pile of brush, and will pay any man for carting home when he returns with an empty cart. Some farmers go to the village market with a load every week, but never think of bringing back any of the cheap refuse that is to be found there. Our thrifty friend has a keen scent for anything that will make his crops better. The spoiled meat or fish from the grocers barrels are just the thing for him. Not a horse dies but he hears of it and has a lien upon the carcase. If he is a shore farmer, he is hungry for seaweed. The dreadful storms are music to his ears, for they roll up the sea-weed in great heaps upon the shore. The village boys know him as the bone merchant. He buys every barrel he can get them to pick up, and is not at all troubled about a process for reducing them. He has better than a bone mill or a carboy of sulphuric acid in that sweltering compost heap. It glows like a furnace even in zero weather, and the bones are melted like wax, and come out in the spring thoroughly rotted, so that they all go to powder under the touch of the shovel. The slow fires of the compost heap never go out upon his farm. The advantages of this perpetual manure heap are manifold. He is making money always, when he is coming home, as well as when he is going to market. He has a ready sale for everything he can raise, for he has a large circle of customers,

all ready to barter their refuse for his well fed products. He never has an idle day from necessity. If nothing else is on hand, manure making is ready. Leaves, brush, bog-hay, salt grass, sea-weed, muck, peat, loam, all have a money value for him. He is never at loss for a few loads of good manure to put into a successive crop. His land is well fed, and he gets paying crops every time. A good many have failed this last season of paying crops, but our friend with the perpetual manure heap ploughed so deep, and got so much of the stuff worked into his soil, that his crops never found out there was a drought until it was too late to make a fuss about it. They are kept too busy to grumble. His fields grow fat, his cattle look sleek, and his poultry cackle in an emphatic, pronounced way that charms all listeners. His neighbors call him manure crazy. I wish that every one of them had his disease as bad as he.

Hearth and Home.

GUARANA.

Lately a new article has made its appearance in commerce, serving a similar purpose to tea or coffee. It is known under the name of Guarana, and although it has been used almost exclusively for its medical properties, it is now relished by many as an article of food. In Brazil the Guarana is used instead of coffee or tea.

The first information received of this article was through Spix and Martius, who traveled for some time in Brazil. There they were told that the Guarana is made out of a vine, known as *Paullinia sorbilis*. The seeds which ripen in October, are taken out of their capsules and dried in the sun; after which they are roasted over a slow fire, ground into a fine powder, mixed with a very little water or exposed to the dew, which gives sufficient moisture to work the mass into a dough. To this a few whole seeds are added, and the mass is then formed into a cylindrical or round form, and sold.

To some of the Indian tribes in Brazil, the Guarana is a necessary and highly appreciated article of food. They make also a very good drink of it, which is used very extensively, and is said to be very nutritious.

In the province of Amazonas there are three different kinds of *Paullinia*, found growing wild. Of these only the *P. sorbilis* is cultivated, and from this the Guarana of commerce is produced. The *P. sorbilis* grows from twenty to thirty feet in height, and is propagated from seed or from cuttings. In the third year the vine begins to bear. It is pruned in the same way as our Grape Vines. The fruit is ripe in November, and each vine bears about eight pounds of seed.

The annual production of Guarana is about six millions of pounds.

RAMIE AS A FORAGE CROP.

A correspondent of the *Rural Carolinian* says:—

"This is the third year since I planted some of the Ramie seed, which I got from the Department of Agriculture at Washington. The bunches have increased from a single plant until now they cover about four feet of ground, and have from eighty to one hundred stalks each, which are now three feet high and leafy. From this I would infer that single plants, at a distance of six feet each way, would soon cover the ground, and without expense in cultivation, as mine has had little or none. The soil in which it is planted is good, and it is so vigorous that it outgrows everything else and rapidly takes possession of the locality.

I have not used it in any way except to feed my milch cow, and it is on this account I trouble you with this communication. It is eaten as rapidly as the Fescue Grass, a fine patch of which I have also, and which herds and cattle are very fond of. The Ramie seems to be preferred by the cow, and she keeps in fine condition, giving a quantity of rich milk. It may be that in time, after

long use, its effects will be otherwise than at present indicated; but if it continues to be as good food as I now think it is, we shall have in this plant an article for stock-feeding which the South has been needing for many years, and has not as yet discovered.

The growth is very rapid after cutting; and its strong hold on the soil, and tendency to spread, with its suitability to a warm climate, make it just what we need; and if it should not prove profitable for its fiber for want of cheap machinery to prepare it for market, it will certainly pay well for grazing purposes."

J. A. D.

Taking for granted that the above notes are correct, we should judge that no better forage plant could be found for our California dairymen and stock-raisers. The matter should receive immediate consideration and trial.—Ed.

GARLIC.

The common Garlic (*Allium sativum*) is propagated usually by offsets known technically as "cloves"—that is, the old bulbs are pulled apart and the small divisions planted in spring. They are usually planted in rows eighteen inches apart, and the sets four to six inches in the rows; plant with a dibble, or by thrusting them into the soil with the fore-finger and thumb. Give the same culture as Onions, gathering in autumn, and tie in bundles, the tops being left on for this purpose. The young bulb will throw up long stalks, and, if not checked, are very likely to run to seed, which must be prevented by breaking down the stems, or tying them in a knot, which is the practice of European gardeners. Garlics are mainly used by foreigners, especially the Germans, and by our people for medical purposes. They are extensively cultivated in the vicinity of New York City, and large quantities are sold in our markets.—*Moore's Rural New Yorker.*

A Profitable Crop.—A farmer in Ohio, recently, picked four hundred bushels of Cranberries from three acres, and sold the lot for $1,520.

CAULIFLOWER.

This fine and much appreciated vegetable is found in our markets at all times, summer and winter, spring and autumn, and it may well be said that probably no climate in the world is better adapted to the growth of the Cauliflower.

When we take into consideration how much care this vegetable requires in the East to bring it to perfection, and how extensively it is grown there in spite of all the obstacles, we wonder why it is not cultivated in every garden here.

The seed should be sown under glass, and in order to have Cauliflowers throughout the year, seed should be sown twice or thrice a year. In the East a hot-bed is necessary not only to sprout the seeds, but also to keep the plants from freezing. Here a cold frame is quite sufficient for all purposes. We would advise the first planting early in the spring, and the second about the months of July and August. The seed which is sown in February, will furnish plants in the fall and early winter; and that which is sown in July and August, will be ready for use in the following spring and early summer.

The young plants are fit for transplanting into the open ground as soon as they have formed from three to four leaves. It is better to keep the plants in a rather dry condition before transplanting, by which method very few plants will be lost. Plant in a deep, rich, light loam, if you have it; water well after transplanting and until they have established themselves in their new quarters; then water sparingly for a month or two. Plants which have been retarded in their growing by such treatment, will form good heads much more promptly and the heads will be far superior. Two or three months after transplanting into the open border, they should receive a plentiful watering, and while the heads are forming hardly too much water can be given. After the heads begin to form care should be taken not to pour water on them, as this will have a bad effect upon the Cauliflower.

While in a growing state the ground should receive a frequent hoeing. The severe heat of summer is injurious to the Cauliflower, and for this reason, to the comparatively moderate climate of the neighborhood of San Francisco, we attribute much of our success in its cultivation.

It is our practice, in order to afford the Cauliflower some protection from the intense rays of the sun, to break or cripple some two or three of the larger leaves that surround the head and to fold them across it.

In the East, Cauliflowers have to be placed under shelter during winter, while here they do equally as well during winter, in the open air, as during the summer time.

The cultivation of Cauliflowers is a very profitable business here, but although easily raised, the price in our markets is high.

We do not see why this wholesome and much relished vegetable should not be grown more extensively by all who have space for it in their gardens.

Weeds.—It is stated in the *Philadelphia Ledger* that there are no less than 214 varieties of Weeds, which have been introduced into the United States from foreign countries, and principally from England. As a proof of the rapidity with which useless plants are accidentally brought over the seas, it is said that in 1837 there were only 137 varieties of foreign Weeds known in this country. As far back as 1672, a curious little volume, called "New England's Rarities," gave a list of 22 varieties of plants which the author considered had sprung up since the English had kept cattle in New England. The author mentions the "Plantain," which, he says, the Indians call the "Englishman's Foot," as though produced by the tread of the white settlers. The common "Yellow Toad-flax," it is stated, was originally introduced into the Province of Pennsylvania, as a garden flower, by a Mr. Ranstead, a Welshman, residing in Philadelphia, from which it has derived the name of "Ranstead's Weed." In 1758 this Weed had overrun the pastures in the inhabited part of Pennsylvania, and was the cause of bitter complaints from the agriculturists of that day. Chickweed, it is stated, was introduced in South Carolina as food for Canary birds, and in ten years spreads for upward of fifty miles, and now occupies the outposts of civilization. The "Scotch Thistle" is said to have been brought to America by a clergyman, who carried with him a bed stuffed with thistle-down, in which some seed remained. Feathers being cheap in the new country, were substituted for the down, which was emptied out, and the seed springing up, soon filled the country with Thistles.

The Scotch Thistle—Why it is Scotland's Emblem.—One time the Danes invaded Scotland, and they prepared to make a night attack on a sleeping garrison. So they crept along as still as possible until they were almost up to the spot. Just at that moment a barefooted soldier stepped on a great Thistle, and the hurt made him utter a sharp, shrill cry of pain. The sound awoke the sleepers, and each man sprang to arms. They fought with great bravery, and the invaders were driven back with much loss. Thus the Thistle saved Scotland, and ever since it has been placed on their seal as their nation's flower.

Poultry Manure.—The best way is to mix Poultry Manure with twice its bulk or more of dry earth or coal ashes, turning the heap several times to mix it thoroughly. Then give it a good wetting, make it into a compact conical heap, and cover it with two or three inches of fresh earth. It will soon ferment and the manure will disappear, diffusing itself throughout the mass. This compost may be used in the hill, but should not be allowed to touch the seed, lest it cause it to rot.—*Exchange.*

An Antidote to Poison.—No matter what kind of poison may be taken into the stomach, it will be neutralized and rendered harmless by swallowing a half pint of Sweet Oil. Of course it should be taken immediately, or at the earliest possible period after swallowing the poison.

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Editorial Portfolio.

During the last session of Congress, a petition was presented by a number of the citizens of New Jersey and Pennsylvania, praying for the abolition of the Department of Agriculture. Such action upon the part of intelligent men (though we have serious doubts of their intelligence) is inexplicable to us, and must, we think, be equally so to the majority of people throughout the country.

The mechanical, commercial and general laboring interests of the land have had—and still do claim—their share of legislation, and why should not the farmer receive a like amount? Is he of all classes (and one of the most important) to be entirely neglected, receiving nought from a government of which he is in fact the strongest support? We hope such is not to be the case, and that instead of abolishing the Department, Congress will extend and widen its field of influence.

To show the falsity of the petition presented by the *citizens* of *New Jersey* and *Pennsylvania*, wherein they state that the Department has already cost the government over $3,000,000 without a corresponding benefit, we have only to quote from the report of the Committee of Retrenchment, of which the Hon. Martin Welker is chairman—a committee which, be it said, held more liberal views than the memorialists and reported adversely to their petition.

The report states, that from the year 1839 (when the first appropriation was made from the Patent Office fund) to, and including the year 1870, the total amount appropriated was $1,810,668, and for permanent improvements, such as the erection of new buildings, etc., the sum of $194,225 has been expended since the year 1867. So much for the expenditure of "*over three millions of dollars.*" Before the *citizens* above mentioned made their statement, they should have examined into the true condition of the financial part of the Department, and so they would have come much nearer the truth. Equally untrue is their statement that there had been no adequate benefit conferred upon the country at large. True, *they* may not have seen or felt the immediate good done, but every Agriculturist and Horticulturist can well testify to its great worth. It is to the latter class of citizens that the Department speaks directly, and it is for them that it more immediately works; in every sense it belongs to them, and at present it is the only share which they have in the government, if we except the *privilege* of paying their taxes.

We extract from the report the following statement to show to our readers what has been done, and let them judge of its value.

"In 1847 the number of agricultural patents granted was but 47; in 1863 it had increased to 390; in 1865 to 642; in 1866 to 1,778; and for each of the last two years it has reached nearly 2,000. These improvements are rapidly revolutionizing the agriculture of the West, and reducing to the lowest point ever attained the proportion of manual labor employed in the operations of farming, saving at least 50 per cent. of the manual labor required in agricultural pursuits.

Under its present able head the Department has distributed the last year nearly six hundred thousand packages of seed, including upward of thirty thousand sacks of winter wheat imported by the Commissioner, besides new varieties of oats and other cereals, which have been sent into every congressional district in the Union; thus affording at once a more general diffusion of new and valuable kinds of grain than would or could be done by private enterprise in many years. As the result of this distribution of seed by the Department from year to year, there are now raised hundreds of thousands of bushels of oats, incomparably superior to the old varieties, and in many instances nearly doubling the crop. And so of the increased quantity and superior quality of the wheat in many of the States. The same might be said of sev-

eral of our other products. This increase has contributed millions to the wealth of the country, and alone establishes the utility and great benefits resulting from this Department.

It is said that he who makes two blades of grass grow where but one did before, is a public benefactor. This Department has done this, and more, in many varieties of agricultural products. It has established relations with organized associations for agricultural improvements, whether governmental or otherwise, making exchanges of seeds, plants, and publications. Through an extended correspondence with foreign societies and our consuls abroad it is searching the world for new and valuable plants to acclimatize, new varieties of cereals to test, and, when found valuable, to distribute, thus finding and introducing into our agriculture the valuable products of all countries suitable and profitable for our cultivation."

To facilitate the work of the Department, it has been divided into several divisions; first of which comes *Statistics*, being in fact the publication office of the Department, from whence have been issued nearly a quarter of a million copies of annual reports, and over twenty five thousand of monthly ones. These reports are made up from data furnished by many thousands of correspondents in all parts of the country, and even from abroad. They have given us more general knowledge of the agricultural condition and resources of the United States than any other work has, or ever can. The division of *Agricultural Chemistry*, has disseminated invaluable information in regard to soils, minerals, springs, etc., and also valuable advice respecting an ever-important subject to agriculturists —that of fertilizers. The division of *Botany*, which is of a more scientific character, has still conferred vast benefits upon the people; given location, properties and the manner of growth, of a large number of plants useful both for food and medicine. The division of *Natural History*, has devoted a large share of attention to illustrating type specimens of fruits and grains; the various metamorphoses of insect life, pointing out those of benefit to the farmer, and warning him against his enemies. The same has been done in the case of birds. The division of *Horticulture* has been instrumental in introducing plants for ornament, as well as shrubs and trees for general usefulness. It has been the constant and oft-repeated articles on arbori-culture, from this Department, which has at last convinced our agriculturists of the great importance of tree cultivation; and now we see the good seed so persistently sown by it, taking root in the general tree planting that is going on all over the country.

Such is a brief outline of the Department's field of labors; who can say that they have not been productive of good? The increased area, and better modes of cultivation, speak a thousand fold in favor of its continuance. Outside of its more special work, the Department is also connected with our system of public lands—of which we still have a large amount—which it is desirable should be brought under cultivation. We are constantly striving for immigration from other countries, and yet here we have a few irresponsible persons asking for the abolition of the only governmental means of disseminating information in regard to this land, its location, value and productions. In Europe, where the land is already well occupied and brought into a high state of culture, the governments expend a vast amount annually for the spreading of agricultural and horticultural knowledge among the people. Russia alone, (a country somewhat similarly situated as our own, inasmuch as she has more land than citizens,) expends every year a larger sum for this purpose than we have done since the Department was first organized, in the year 1839. In the paroxysm of economy that seems to have taken hold of the "*citizens*" of these two States, we see another illustration of the old proverb, "penny-wise and pound-foolish."

The *Rural New Yorker* says the stalks of the Jerusalem Artichoke, cut when green and cured like Hay, make exeellent food.

DELAY.

We feel it our duty to apologize to our subscribers for the great delay in issuing the present number of the Magazine. This was occasioned by the impossibility of obtaining in the city the quality of paper we are accustomed to use. Notwithstanding our anxious waiting, we have been compelled to substitute a much lighter paper than we approve, none of the kind we required having arrived when we went to press. We shall endeavor to guard against such mishaps in the future.

CORRECTION.—"*ERICA.*"

Number two of this Journal contained an article on the "Erica," (page 37,) which it seems is not quite correct. It is stated there that the Erica is indigenous to the Cape of Good Hope and Australia. Such was supposed to be the case by the writer of the article, but we have received a letter from a correspondent writing from Sydney, (New South Wales,) calling our attention to the error, and pointing out wherein it may have occurred. He says: "Now, although we have the order represented by the *Wittslenia*, *Pernettya* and *Gaultheria*, yet there has not been a true *Erica* found in any of the group. Our *Epacridaceæ* which may be termed *Australian Ericas*, are pretty closely allied to the genus, and are often mistaken by new arrivals for *Ericas*."

THE "CALIFORNIA MAIL BAG."

A copy of this publication, issued from the office of the *San Francisco News Letter*, has been laid upon our desk. It is to be published once a month, and is sold at the low price of 25 cents per copy. It contains a solid repast of literary food, seasoned with the *Town Crier's* wit. We noticed several articles bearing upon the agricultural interests of the State, one of which, "Viniculture and Wine-making in California," is exceedingly good.

"POMOLOGIST AND GARDENER."

The *Western Gardener* and the *Western Pomologist* have been consolidated, and the resulting Journal will bear the name of the *Pomologist and Gardener*, the proprietorship remaining in the hands of Mark Miller. From the well known character and ability of the editorial staffs of these two leading Horticultural and Pomological journals heretofore, we can safely expect that the consolidation will result in great good to the interests for which it will labor.

THE "GILROY TELEGRAM."

We have received the first number of this Journal, and hope friend Cipperton will have better luck in his new field of operations than he had in the old one. We always greeted the *Mayfield Enterprise* with pleasure, and hope to do the same by the *Telegram*.

OUR TRIP TO SAN LORENZO.

Taking passage by the Alameda Ferry boat and the cars connected with that boat, we enjoyed one of the pleasantest trips which Californian enterprise and perseverance can afford to the excursionist. Passing along this line the gradual change of climate, which grows perceptibly milder, is very apparent; everywhere we saw fields covered with luxuriant vegetation, and the land in a high state of cultivation.

At Ashland Station we quitted the cars to pay a visit to Mr. Lewelling, the well-known Horticulturist, whose residence is but five minutes' walk from that station. Entering his grounds, we were surrounded by improvements, which reflect the highest credit upon the owner. We found Mr. Lewelling superintending and assisting a large force of men in packing Cherries and Currants for the San Francisco market, and through his courtesy we very soon felt perfectly at home. From the short conversation we had with him, we were enabled to gather many items of un-

usual interest, and many of his suggestions are worthy of extensive perusal. But time and space compel us to be concise on this occasion.

Mr. Lewelling has 150 acres of land under cultivation, 40 of which are planted in Currants, and the greater part of the balance is laid out as a Nursery and in extensive Orchards. His leading and most remunerative products are Cherries and Currants.

He cultivates the Cherry-currant almost exclusively, and we never have seen them in better condition. This year's crop he estimates at 150,000 pounds, which bring from 8 to 15 cents per pound.

He has 5,000 Cherry trees in bearing condition, which will yield 50,000 pounds of Cherries this year, which are sold at from 6 to 25 cents per pound.

The following are the varieties principally cultivated, and after a long experience of sixteen years, considered by him the best and most profitable.

Werder's Early Black, a Cherry of medium to large size, and very fine flavor; it is an abundant bearer.

Monstrous de Mazel, a black Cherry of very large size and firm flesh; prolific. It will crack in wet seasons, but is one of the finest Cherries for market in dry weather.

Jenny Lind, a beautiful light red Cherry of medium size, but almost too tender for market; highly flavored.

Royal Ann, so called on the Pacific coast, but in the East known as *Napoleon Bigareau*, a very large Cherry of a light red color in the shade and dark red in the sun; highly flavored and very fine for shipping.

Graffion, (or Yellow Spanish,) a large red Cherry; highly flavored and fine for market.

Early Purple Guigne, a black Cherry of medium size, highly flavored; it is a shy bearer, but sells well.

Elton, large red Cherry, fine flavored; good bearer.

Black Eagle, a medium sized Cherry of the highest flavor; bears a fair crop when the tree is of age.

Reine Hortense, a Duke Cherry of bright red color; a prolific bearer, large, and finest of the Dukes; does not thrive well in some localities.

Pontiac, dark red, almost black, firm flesh, high flavor; an abundant bearer.

Black Tartarian, large Cherry of fine quality; a prolific bearer.

Rockport Bigareau, highly colored red and amber, fine flavored; very good bearer.

Coe's Transparent, a large, finely flavored Cherry, mottled, very tender and too delicate for market.

Mr. Lewelling cultivates many other new varieties, but their merits are as yet doubtful. He intends to set out a goodly number of Cherry trees during the next planting season, and considers his grounds much better adapted for the cultivation of Cherries and Plums, than for Apples and Pears; besides the former are much more profitable to him.

Some of our readers may feel astonished when we state, that Mr. Lewelling has a very fine lot of Orange trees on the ground, some of which have now ripe Oranges of unusual size and beauty; he intends to plant a good number of them between his Apple trees, to take their place after the Orange trees have attained a good size.

We noticed an English Walnut tree full of fruit, also a Mulberry tree with some ripe fruit, and many other trees and plants, which form an unusual attraction for visitors.

The ornamental grounds contain fine specimens of the *Thuya gigantea*, *Crataegus*, *Camellias*, *Dracœnas*, *Loquats*, *Pomegranates*, *Oleanders*, and many other ornamental trees and flowers.

After critically inspecting all the different varieties of Cherry trees, and fully appreciating their most delicious fruit, we proceeded to pay a visit to Mr. Meek, whose grounds are within five minutes' walk of Mr. Lewelling's. We found Mr. Meek's men busily engaged packing Currants and Cherries, but, unfortunately, Mr. Meeks was absent from home, and as every one seemed to have his hands full we made our stay short, and turned to Mr. Hathaway's place, which is

also a very short walk from Mr. Meek's. We were met by our old friend, Mr. P. Ford, who introduced us to Mrs. Hathaway, who made our stay very pleasant indeed. Mrs. Hathaway loves flowers, and takes great delight in the care of them. This new place possesses all the advantages needed for landscape; and our friend Meyer, who had charge of the arranging and planting of the ornamental grounds, has displayed much taste and perseverance. Considering the late planting of trees and shrubs, everything looks very promising.

On our return we visited Mr. Cane, who has a very elegant place in the vicinity filled with highly cultivated fruit trees and vines. Mr. Cane's Currants are of extraordinary size and quality. The ornamental grounds are managed under the supervision of Mrs. Cane, who succeeds in keeping the beds literally covered with the most elegant flowers.

We were obliged to make for the cars in double quick time, and returning, we recorded the day as one of the most pleasant we had experienced in California.

HINTS TO AMATEUR GARDENERS.

Over the signature of "R. W.," we published, in our last issue, a letter containing some very important suggestions to this Magazine, and referring to the utility of certain practicable hints which we might give to our Amateur Gardeners.

To some extent we have endeavored to meet the expectations of our readers, and shall continue to do so from time to time, with pleasure.

In regard to the propagation of plants, it is next to impossible to give positive and definite rules of a general character, as the treatment in propagating differs almost as much as the plants themselves do. Our correspondent refers in particular to the propagation of Roses, Pinks, Geraniums, Daisies, Pansies, etc., for instance, and to please him, we will give a few hints in regard to these same flowering plants.

Roses are propagated in various ways, and our mode in California differs very much from that of the East or in Europe. In the fall of the year, when the wood is ripe, florists make their cuttings from Roses, three to five inches long, plant them out in regular nursery-rows close together, and 75 per cent. of them will make roots in a few months. In making Rose cuttings, care must be taken to cut below a good and sound eye with a sharp knife. In planting them, no more than one or two eyes should be allowed above the surface. Some florists bundle up the cuttings after preparing them, 100 to 300 in a bundle, keep them in moderately moist ground and plant them out in nursery-rows after a month or two, while others plunge the bundles into charcoal dust for a few weeks or months. All this we found unnecessary labor. We simply cut off the cuttings as above described, plant them out, and Nature takes care of them.

Some varieties, such as the La Marque, Cloth of Gold and Solfaterre, do not thrive so well under this treatment, and are therefore frequently budded.

In Europe it has been the practice to cut off young shoots in their growing condition, plant them in pots or boxes and place them close under glass, care being taken to shade them for a few days; but we are under the impression that the former treatment is the best and surest, and that only Tea-roses can be propagated successfully by the other treatment; in the latter case we would recommend a little bottom heat.

Many varieties are propagated by budding into the stock of the Castilian or other inferior Roses.

Pinks are also propagated by cuttings or layers; the best time to make cuttings is soon after they have passed the first flowering season. Some florists plant the cuttings under glass; we prefer the open ground culture, provided the ground can be kept moist—in a month or six weeks they will be rooted.

Geraniums may be propagated at any time in this country, but the cuttings must be placed under glass and sparingly watered; in less than thirty days they will have rooted.

Care should be taken to use the tops and ends of the branches, as they will make better plants than a long branch divided into a number of short cuttings.

All these young plants must be placed in three inch pots, and kept in the shade for a day or two; as the plants grow up the tops should be cut off so as to make them branch out and become bushy.

The Daisies are propagated by dividing the old roots in autumn after the first rains have fallen. The oftener Daisies are transplanted the better they will thrive, but unless the ground is moist, they will not do very well.

Pansies are best raised from seeds, which should be collected from the best flowers. The seed may be sown in the fall of the year, and the young plants will come into flower during the early part of spring. Unless the weather prove very cold, the seed will come up well in the open ground. Old plants should be thrown away to make room for young ones; but if there are certain varieties in a collection which it is desirable to preserve, the old root may be divided, the tops cut off, and the sections planted a little deeper than before, where they are intended to remain. The soil for Pansies should be deep loam, well manured.

OUR NEXT EXHIBITION.

Heretofore Pomologists and Florists have made strenuous efforts to exhibit as many varieties of fruits and flowers as possible, and although these efforts to do so are highly commendable, yet we would prefer seeing every one striving to excel in quality rather than in quantity.

The majority of fruit-growers and amateurs will be able to exhibit from six to twelve varieties of excellent Apples, Pears or Grapes, while an attempt to display fifty varieties, may not be so successful.

One of our horticultural friends told us, the other day, that on account of the very dry season his fruits seem to be much smaller than usual, and he did not like to exhibit unless he could come up to the expectations of the public. We would advise him to exhibit his very best, and not fear the result. The drouth is general, and doubtless every orchard is similarly affected; we believe his fruit to be fully up to the average. Any orchard can produce a few varieties of Apples or Pears suitable for public exhibition, and if only one out of every fifty will send in a small assortment of his very best, the exhibition will be a complete success, while a few extensive collections would fill up much space, but would give an inferior average.

Let every one interested in Horticulture contribute his share, and the show will be very satisfactory to the exhibitors and to the public in general.

HEALTHY NURSERY-STOCK.

We noticed, the other day, the extensive stock of fruit-tree seedlings at M. Lewelling's grounds, in San Lorenzo, which he has imported from Messrs. Ellwanger & Barry, of Rochester, in New York. These young trees look fine, and will be ready for budding during the coming season. The lot consists chiefly of Pears, Apples and Cherries, and all of them came up to the most sanguine expectations.

BAY DISTRICT HORTICULTURAL SOCIETY.

A special meeting of this Society was held on Saturday, June 10th.

The requisite number of members being present, the motion to incorporate the Society was passed unanimously.

Trustees were elected in addition to those already serving, so as to make the new Board consist of seven; the names of which are—C. A. Stivers, M. D., E. L. Reimer, F. Luedemann, F. A. Miller, C. Schuman, R. Turnbull and F. A. Herring.

It was decided to incorporate the Society for a period of fifty years, with a capital stock of $25,000, divided into 1,000 shares of $25 each.

A letter was read from F. Von Mueller of the Botanical Gardens, Melbourne, in which this gentleman informed the Society, that he had sent for distribution a quantity of tree and plant seeds.

Dr. Mueller is untiring in his efforts to help the cause of Horticulture, and great credit is due him for the introduction and cultivation of many valuable plants.

NEW AND RARE PLANTS.

Our European and Eastern exchanges describe some new plants which we believe of interest to our florists and amateurs.

Achimenes nœgelioides diamantina, a charming stove perennial, producing gloxinia-like flowers, of a pleasing rosy purple color, marked down the lower side of the tube with a cord; a garden hybrid, which was raised in Van Houtte's nursery.

Callipsyche mirabilis, a new and interesting amaryllis, from Peru. It is a greenhouse bulb, and produces two oblong spathulate green leaves a foot long, and a scope three feet high, bearing an umbellate head of about thirty small, pale, greenish-yellow flowers, with stamens three times as long as the perianth, and spreading out on all sides, so that the general contour of the flower-head may be compared to that of an expanded parasol.

Deutzia grenata albo plena, a fine dwarf, hardy, deciduous shrub, valuable for forcing, flowers a pure white.

Hyacinthus candidus, so different in many respects from the ordinary Hyacinth, that some doubt has been raised as to its classification. It has a large bulb with sub-erect leaves two and a half feet long and recurved, flowerscape four feet long, with a raceme one foot long, consisting of fifteen to twenty large, drooping, funeral, bell-shaped, pure white flowers; a native of South Africa.

Rhodora canadensis, a low growing shrub, from one to three feet high, producing clusters of showy, rose-purple flowers, somewhat like an Azalea; a native of the Eastern States, but can be obtained in some of the nurseries.

Leucothoe racemosa, (clustered Leucothoe,) found north of Virginia, a shrub from four to six feet high. Its flowers are borne in racemes three or four inches long at the ends of the branches. The flowers are pure white, cylindrical and contracted at the mouth, arranged with great regularity and all turned downward. The shrub, when in bloom, is very attractive and the flowers very fragrant.

Giant crimson mignonette, mentioned in the English exchanges, is described as a very robust grower, with large spikes of handsome flowers of exquisite fragrance, and a free and perpetual bloomer.

OUR FRUIT AND VEGETABLE MARKETS.

Our Fruit and Vegetable markets now present a very pleasing appearance, and well repay a stroll through them before breakfast, the effect being most refreshing and appetizing.

The supply of Cherries is abundant, and the quality superior to those of last season, while the varieties are greater; the better sorts retailing at 25 cents per lb.

Currants are plentiful, and very fine.

Apricots are small but juicy, retailing at 12½ cents per lb.

A small supply of Cherry-plums are also in the market at 12½ cents per lb.

Of green Gooseberries there is an abundant supply and of better size than last season.

Blackberries and Raspberries (at 40 cents per lb) are just appearing.

A few new Apples, some indigestible-looking Pears, and a few Almonds, are also on sale.

There is still a supply of old Apples at $1 per box, and we noticed some Bell-Pears of last season averaging 4 lb 6 oz. each.

Of Tropical Fruits there is a very fair exhibit. Pines and Bananas, Oranges, Limes and Lemons are plentiful, and Nuts are abundant.

Vegetables, also, are plentiful. New Potatoes, Cabbages and Cauliflowers are in full supply, and the quality good.

Peas, String-beans and Squash are abundant, and Asparagus of superior quality, in quantity to meet all demands.

Lettuce and Celery, Tomatoes, Onions, Carrots, Turnips and Beets are also in good supply; and a fair show of Sweet-corn, Egg-plant and Artichokes, with an exhibit of Capsicum and Gumbo, and sundries too numerous to mention.

Correspondence.

WASHINGTON, June 10th, 1871.

Editor Horticulturist: The warm summer is upon us, 80 to 90 degrees of temperature, with frequent refreshing showers; plenty of berries and vegetables in the market, and a very promising prospect for good crops of grass, grain and fruits. Most of our prominent officials, politicians and leisure-loungers have started off—from the President down to the messengers—to make their "summer swing round the circle" of those attractive resorts where congregate the grave, gay and gamblers, as at Long Branch, Saratoga, and other places. Yet base-ball matches, regatta sports, and picnic excursions keep Washington pretty lively, although the arena sports of Congress and lobbyists are gone from the city. The greatest attraction to visitors is the grounds, gardens, conservatory and museum of the Agricultural Department. Gen. Horace Capron, the Commissioner, who, like Napoleon, has chosen around him suitable and efficient men as aids to make the place useful and attractive to a high degree; and yet very few persons of all who come here ever visit, or even think of, this most interesting institution; its experimental, botanical and propagating gardens, with the arboretums and green-houses, under the management of Professor Saunders and his assistants, Messrs. Glass and Brummel, constitute the most pleasing as well as profitable resort in the city, particularly for farmers and horticulturists; and only second to this, is the museum in the large building in charge of Professor Glover, the Entomologist, and assistants. Much is due to the obliging efficiency of the Chief Clerk, R. T. McLain, Esq.; but one of the most hard-working men is J. R. Dodge, Esq., the Statistician of the Department. Let all visitors to Washington go to this Department before they leave.

Next in interest to the visitor, is the Patent Office, with its long lines of cases and shelves filled with ingenious models, the products of American invention and labor, worth the attention of all mechanics who come to the Capital.

Visiting the pleasant home of Esquire Clarke, one of the city justices, the other morning, I saw a fine show of flowers, fruits and plants; but what I wish particularly to speak of is the great profit he makes from a small patch of ground, working the hours he is not engaged in his office, for the benefit of others; in propagating and selling grape cuttings, small fruits, flowers and garden plants, he clears about one dollar the square foot of the ground he cultivates; instance, from one spot of ground, ten feet by two—twenty square feet—he sold in one season $22 worth of small grape-cuttings, and does nearly as well on other patches with other plants. I call special attention to this as proving what vast profits can be realized from a little land if skillfully and seasonably tilled.

One of the most interesting and useful institutions in this District, is "The Potomac Fruit Growers' Association," a Society composed of the most respectable growers in Virginia, Maryland, and the District of Columbia, which meets the first Tuesday of each month, to discuss matters and examine and test such specimens as may come before it. The June meeting was a pleasing and profitable one; and as some of the matters developed are of general interest and utility, I will incorporate a portion of the published proceedings into this letter for your readers.

A letter was received from a grape grower in Fredonia, N. Y., stating that he finds that business profitable when properly done.

Friend Gillingham presented some Apples of both last year and new ones of the present season's growth.

Some fine Cherries were also placed on the table by Mr. Munson, and running conversations were indulged in by the members in regard to these fruits.

The Apples on exhibition were the *Abram* of last year, and the *Astracan* of this present season. The Cherries were specimens of *May-dukes*.

The morning hour expired; the President announced a paper on Grafting, by Friend C. Gillingham, in which he also gave a brief account of the early effect of this mode of propagating the Apple and other fruits.

Some debate followed the reading of the paper by different members in regard to the Effect of the Sun on Trees, showing the benefit of excluding scorching sun from the body of the trees, and in which Messrs. King, Curtiss, Smith, Snodgrass, Bryant, and others engaged, which greatly resulted in proving the advantages of low pruning and shading the body of trees.

Mr. Bryant spoke of Mulching having caused his Raspberries to be injured by frost, and the reason therefor was a query.

Dr. Howland thought the mulching prevented the warm earth from radiating warmth to dissolve the frost, while the warm ground not mulched gave off heat and prevented frost.

Mr. Saunders concurred in this opinion, and illustrated it. He said we must understand and follow Nature's laws.

Some facts from successful growers were presented by Col. Curtiss showing that berry growers in New Jersey make from $200 to $300 per acre net profits in growing Strawberries and Blackberries; and also in regard to Potatoes free from the ravages of the beetle in Iowa, showing the Peachblows with the Peerless and Chili to be most free from the beetle.

Some fine black Cherries were placed on the table by Mr. A. E. L. Keese, of this city, who made a statement of his manner of applying air-slacked lime to his trees to keep off insects, as also does whale oil soap-suds.

Professor Taylor spoke about whale oil soap and lime, and asked if both were used together?

Mr. Keese said where lime and soap were both used together on his Plum and Cherry trees, there were no insects.

Prof. Taylor explained the effect of heat and light on the sap of trees, and showed how, chemically, injurious effects will be prevented.

Mr. Byrant asked if salt was a good preventive to save Strawberries from destruction by worms, and many members thought it was a remedy.

The President and others spoke of salt and salt fish, which killed plants as well as worms when applied alone. He said, by mixing plaster the plants were not injured, and a fine growth of Potatoes was realized.

Col. Curtiss stated that salt brine would kill the worms; it would also kill plants, if applied without mixture, but if mixed with manure or lime-water, the worms would be killed, and the plants benefited.

Prof. Taylor said the question of salt was not sufficiently understood by farmers. He said, he believed salt had decided action on lime, which makes an excellent food for plants.

Mr. King spoke of the use of salt in compost, by his father, which killed the worms and benefited his crops.

Dr. Snodgrass replied to Professor Taylor with some fear that at times there is danger from these chemical gentlemen; and Prof. Taylor responded.

Prof. Wm. Saunders spoke of salt dissolved in lime-water, as a good decomposer of vegetable matter, and hence becomes a very useful ingredient in fertilizers. It holds and attracts moisture, and for this reason is also useful among fertilizers. It is very much used among some composts in Scotland.

The Chair announced that the Strawberry was the order for discussion at this time, and asked if any one wished to speak upon the subject.

Mr. J. Hoffman Smith gave his experiences and failures in the cultivation. His failures in the cultivation were principally on cleanly cultivated lands; he kept the runners down, and his Triomphe-de-grande grew well. The rust struck those cleanly cultivated, while where the grass stood thickly there was no rust. Where he gave his plants liberal mulch, with leaves or short straw he got good yield, and had no rust.

Mr. Saunders thought perhaps the cause was the *red spider*, which prevails in dry seasons, but is destroyed and prevented by moisture.

Col. Curtiss thought the theory of Mr. Saunders well sustained by the facts stated by Mr. Smith.

Prof. Taylor thought the same, and that spiders, not rust, was the trouble.

The Chairman asked Col. Curtiss if he thought thorough culture produced drought or dryness.

Col. Curtiss answered no; dut deep, thorough culture greatly prevents the evils of *both*, drought and excess of wet.

Dr. Howland, upon being asked, stated that his *Hale's Early* and *Troth's Early* varieties of Peaches show no signs of insects or curculio thus far, and promise very finely for a good yield.

Judge Gray said if he had not a good crop it will not be his fault, as he gave his trees the chance to do the best they could.

Mr. Saunders and Friend Gillingham both stated that Peaches and Cherries will rot from wet without being stung by insects.

Mr. Saunders said that dry soil and dry seasons are favorable for Hale's Early Peach.

Dr. Snodgrass concurred in the same opinions, that mulch was needed where it was desired to preserve moisture.

After some desultory conversation, the Chairman announced, as the special orders of business for the next meeting, a paper by Col. D. S. Curtiss, on the Necessity of efficient association among producers; also, by Prof. Wm. Saunders, an Essay on the Raspberry and Blackberry; and, by Chalkley Gillingham, on the Deterioration of varieties of fruits.

One of the very pleasing and rare floral novelties introduced into our community, is the *Clianthus Dampieri*, or Glory-pea, of Australia—a most beautiful, showy flower and plant, imported by one of our members, John Saul, the distinguished florist.

The mechanics and other laborers in the city begin to manifest lively feeling and activity for labor and land reform, and to maintain the rights and interests of industry; while the "*Patrons of Husbandry*" are equally awake to elevate agricultural industry; not that any of these classes have any inimical feelings toward corporations or capital, but desire simply to protect or aid themselves against undue monopolies of land and capital in combinations detrimental to the true rights of labor.

The *Order of Patrons of Husbandry* is one of the noblest and most beautiful ever devised by men; it is rapidly growing in the middle and prairie States, and will ultimately work the elevation and salvation of the producing classes. D. S. C.

Palms on San Bernardino Mountain.—The Los Angeles *Star* says it is not generally known that a species of native palm grows luxuriantly in the canons on the eastern slope of San Bernardino mountain. It bears a small black fruit of a sweetish taste, which is highly prized by the Indians as an article of food. The fruit grows in a single cluster, about the size of a bushel basket.

Great Success in Growing Cabbage.—The *Russian River Flag* says: "William Kee, of Bodega Point, raised and sent into the San Francisco market last season, from three and a half acres of land, $3,000 worth of Cabbage. Mr. Kee's success, it is said, has been the means of inducing several of his neighbors to go into the business this spring."

Editorial Gleanings.

How to Destroy Insects in General.—I have used the following mixture for some years with success in the destruction of such pests as mildew, scale, mealy-bug, red-spider, and thrip; in fact, it is my only remedy in the case of trees, shrubs, and stove and greenhouse plants, but much care is required in its use as regards strength, and thorough syringing afterwards: 2 oz. Flowers of Sulphur worked into a paste with a little water, 2 oz Washing Soda, ½ oz. common shag Tobacco, and a piece of Quicklime about the size of a duck's egg; put them all into a saucepan with one gallon of Water, boil, and stir for a quarter of an hour, and let the whole settle until it becomes cold and clear. It should then be poured off, leaving the sediment. It will keep good for a long time. In using it, add water, according to the strength or substance of the foliage. I formerly used one ounce of Soft Soap with the other ingredients, but I find it is effectual without, and it does not now leave any marks on the leaves. I would simply suggest a fair trial, and I think no one who uses it properly will regret its use, or very seldom be without a good jar of it. In a nursery among young fruit trees subject to American aphis, or curled and mildewed foliage, I do not know its equal; even black-fly on Cherries will not stand it. I can point to some fruit trees in a gentleman's garden which two years since were fast dying when I was called in. I had them syringed, and the shoots untacked from the wall, and dipped in this mixture. This was done three times during the season, and they are now strong, healthy, and vigorous.—*D. J. Northwood.*

The Cultivation of the Quince.—Of all our fruit trees there is scarcely any so easily grown as the Quince, and very few persons pay it the least regard, more than to place it in some unfrequented spot where it becomes a subject of complete neglect, where, choked with grass and incumbered with weeds, it makes a slow and mossy growth, and generally yields an annual crop of fruit, though the quality is often poor indeed; for—like any other product of the soil—it requires care and cultivation to perfect its fruit; but never to my knowledge has this tree, when properly cultivated, pruned and annually fertilized—as all fruit growers consider necessary in the cultivation of the Pear—failed to produce abundant crops of very superior quality.

Public opinion needs to be changed in regard to the Quince. It delights in a somewhat moist soil, as most fruit trees do, and for this reason is often planted where the ground is constantly wet, which is a decided mistake. Any deep, rich soil annually mulched with three or four inches of leaves, straw or coarse litter, will be found sufficiently moist for the Quince, and the best of care will bring about astonishing results with this much neglected fruit.

Cor. Dutchess Farmer.

The Tuberose.—A successful florist gives the *Country Gentleman* the following mode, which he adopts for this bulbous plant. He says:—"Take the flowering bulbs and break off all the offsets—do not leave one; put them in a light, friable loam, with a liberal mixture of leaf-mold and well rotted cow-manure. In case of drought, give them plenty of water, and the work is done, and you will soon be amply rewarded by delicious perfumes. There is nothing in my garden does better with this management, or gives me less trouble."

Value of Lime.—A writer in the *Journal of the Royal Agricultural Society*, describing the permanence of the action of Lime, says he knows of a piece of land containing 166 acres, which formerly grew nothing but heath. A good dressing of lime was applied to the surface of the sward, which has nearly doubled its value. This was done several years ago, and totally eradicated the heath.

The lime to this day appears in full condition, as its effects usually testify, from the richness and sweetness of the herbage, the texture of which has been entirely changed by the application of lime.

Ashes for Peas.—The *Rural New Yorker* says, a woman sends us the following from her Market Garden Diary:—"In the spring of 1866, in sowing Peas we ashed some in the row, leaving other rows unashed. The difference was very remarkable. Those that were ashed were more thrifty, of a darker, richer color, producing at the time of picking larger pods and a superior quality of peas. The same is true of turnips."

The Tea as an Ornamental Shrub.—A lady from North Carolina sends to the American Agriculturist some tea nuts, and states that she highly prizes the shrub as an ornament to her garden. It grows ten feet high with her and is an evergreen. It has endured the severe cold of the past winter without injury. With protection it would be hardy further north. Mrs. E. prepares from the leaves tea of satisfactory quality.

Onion Sets require a light, fine, and not very rich soil. The seed should be sown thickly in rows, nine inches apart; to facilitate working, every eighth row should be omitted in planting, so as to leave a walk. The plants require to be kept free from weeds during the season. The sowing should be done in April, and the sets will be ripe in August. It is estimated that about forty pounds of seed are required for an acre, and that a pound of seed will, under favorable circumstances, give from three to four bushels of sets.—*American Agriculturist.*

Discovery of New Guano Fields.—From good authority we understand that extensive deposits of Guano have been discovered in Peru, of several miles in length.

Branched Trusses in Geraniums.—A correspondent of the *Gardener's Monthly* writes the following:—

"I enclose you a flower-stock of a Geranium, a seedling raised by me more than nine years ago. It is a seedling of the Queen of Summer, and resembles the parent somewhat in foliage, which is a rich light-green on the edges of the leaf, shaded almost to entire white in the centre; but the growth and habit of the plant are entirely different. This plant is disposed to be bushy; the body of it frequently entirely white, striped with green. This constitutes one great beauty of the plant. Another beauty and peculiarity is, that after the first cluster of flowers is past its best, (but not yet out of bloom,) out of the cluster of flowers there spring one or two small green leaves and another flower-stock: in a day or two another, and frequently a third; these bloom quite as finely as the first, giving the plant a very unique appearance. After testing it two years, and finding this to be the regular habit of the plant, I gave a plant of it to Mr. Charles Allen, who propagated and sold it under the name of 'Madam Balfour.' I have always called it 'Louise.' The *Gardener's Monthly* considers this something like the thyrsoid character of allied species, and as occurring very rarely in this species."

Variegated Crown Imperial.—The Crown Imperial is the monarch of spring bulbs. It lifts its stately head far above the Tulip, Narcissus, and other humbler plants, and wears its floral crown with a royal air. Kings are but mortals and Crown Imperials are not all perfect. The large bulb which we plant in autumn is about as repulsive in odor as a Skunk-cabbage with the Cabbage omitted. The bulbs of the Crown Imperial should not be left too long out of the ground, as they dry up and become weakened, and probably this strong odor is a hint that they should be promptly earthed. In spring this bulb throws up a robust stem, clothed part of the way with luxuriant leaves; then a bare space of stem, above this a large whorl or crown of

pendant tulip-like red or yellow flowers, and above all a tuft of smaller leaves. These flowers do not show all their beauty until we examine them closely. Turn one of them up and there, at the base, are six pearls—at least they look like pearls; but they are only of honey-like liquid, in a round cavity at the base of each petal. We have been much pleased this spring with the variegated Crown Imperials—the Golden and Silver-striped, as they are called. The variegation is well marked, and appears very lively in contrast with the dark-green foliage of the ordinary form. The plants with variegated foliage do not flower as freely as the others, sometimes failing to bloom altogether, and often producing flowers much reduced in size. Yet their foliage is so bright that they are worth growing, even if they do not flower at all.

American Agriculturist.

Silk Culture.—The business of Silk Culture in the vicinity of Sacramento, says the *Union*, appears to have passed to a great extent into the hands of Frenchmen and Italians, who are thoroughly acquainted with the business. I. N. Hoag has rented two of his cocooneries for cash in advance, and the third on shares. A. P. Smith has also rented his, and the two Davisville companies have also leased theirs.

How to Make a Farm Poor.—Cultivate Wheat and Oats largely. Sell all you raise. Have your grain thrashed in the field, and burn your straw when it is in your way. That is the way to make a farm poor. This is the way to make a farm rich: Cultivate wheat, oats and other crops, and feed the straw to the stock. Take all care of manure; manure your grain fields and your fruit trees. Change crops by rotation—not forgetting the great value to lands of clover. We are quite sure that more stock should be raised on farms than is now done. There is greater profit in raising horses, cattle, hogs and sheep than in growing wheat.—*Western Farmer.*

Beauty *vs.* Deformity.—The *Southern Farmer* says: "Beautify your home. It is astonishing to see how much can be done year by year to adorn and beautify the farmer's home and its surroundings. A few trees set out here and there; a few old decayed trees grubbed up, perhaps, and removed, an unsightly wall or fence taken out of the way; in a thousand ways, indeed, beauty may be made to spring out of deformity, and that too without any serious expenditure of time or money."

Watering Plants with Iron.—It is stated as a new discovery, that wonderful effects may be obtained by watering fruit trees and vegetables with a solution of sulphate of iron. Under this system beans will grow to nearly double the size, and will acquire a much more savory taste. The pear seems to be particularly well adapted for this treatment. Old nails thrown into water and left to rust there will impart to it all the necessary qualities for forcing vegetables as described.

British Medical Journal.

Injury to Vegetation from Gas.—It is by no means an uncommon assumption that illuminating Gas, in escaping from pipes into the soil, exercises a poisonous influence upon vegetation; and a suit was recently brought at Aix-la-Chapelle, by the city authorities, against a gas company for recovery of supposed damage to the shade trees of the city, resulting from their careless method of laying the pipes. This was the cause of a detailed series of experiments in regard to the assumed fact, and somewhat to the surprise of every one, it was ascertained that purified illuminating Gas had really little or no injurious effect of the kind asserted. The experiments were conducted by eminent chemists, and included trials with pure hydrogen, light carburetted hydrogen, and heavy carburetted hydrogen, as well as purified illuminating Gas. A discharge, during an entire day, of these various gaseous substances into the soil of vessels containing growing plants was

found to produce little, if any, hurtful result. It was different, however, when these same gases were impregnated with the constituents of coal tar, especially with carbolic acid, in which case, after a few days, a very decided injury to the vegetation was found to have taken place. The effect seemed to be that these impurities, coming in contact with the roots of the plants, deposit tarry matter upon them which ultimately caused death by a kind of asphyxia. The smallest quantity of carbolic was found to have a very decided influence; so that the principal caution to be observed, as far as injurious results are concerned, is to see that the carbolic acid is entirely eliminated. In one experiment a discharge of Gas was allowed to take place for three hours daily, for a period of an entire year, and the effect, if anything, was to secure a fuller development of the plant.

All that those experiments appear to prove, however, is that perfectly pure illuminating Gas is not injurious to the roots of vegetation, the fact remaining demonstrable that ordinary Gas does have a marked noxious effect. The elaborate communication in 1858 to the Philadelphia Academy of Natural Sciences, by Mr. Fahnestock, shows this very clearly, in a case where the contents of a large greenhouse were destroyed. In another instance a stroke of lightning, passing along the street gas-mains in Racine, in 1867, disturbed their joints and caused a leakage which resulted in the death of nearly all the shade trees along the entire square.

Leached Ashes as a Manure.—An agricultural journal of Germany calls renewed attention to the great value, as a Manure, of Soap-boilers' Leached Ashes, which, as is well known, are prepared by mixing wood-ashes with fresh burnt lime, and boiling or leaching the two together for the purpose of obtaining a caustic lye. Although the soluble salts are removed from these ashes, the insoluble parts remain, namely, the carbonates, sulphates, and phosphates, principally lime salts, accompanied generally by a little caustic lime. Experience has shown that there is no substance equal to leached ashes of this kind for manure, not excepting even the richest guanos; the vegetation of the cereals becoming broader than common by its use, and the stalks more tubular, while the leaves grow of a dark, bluish-green. The value of this application is seen more particularly in meadows, where, curiously enough, nearly all the ordinary grass disappears in consequence, and instead of it a thick vegetation of red clover is met with, which will be renewed year by year for a long time, without additional supply.

Darlingtonia Californica.—Mr. Worthington G. Smith calls attention in "Nature" to certain living plants of *Darlingtonia Californica*, or the American Pitcher Plant, described many years ago in the Smithsonian Contributions, by Dr. Torrey, from specimens brought by General Fremont from what is now Nevada. According to Mr. Smith, the plant possesses an irresistible attraction to insects, the nature of which is entirely unaccountable. When in bloom the flower is said to resemble the upraised head and body of the cobra, with mouth expanded, and prepared for a spring, the head being at right angles with the hollow, vertical body, and apparently presenting no opening by which an insect can enter. Blue-bottle or blow-flies are said to make their way immediately to this plant whenever they come into a room where it is growing, and alighting on a portion of the flower, they fly upward into the previously unseen entrance to the tube, and from this they descend the hollow body, and apparently never return alive, keeping up a buzzing noise for half an hour and then dying. This cavity of the plant soon becomes entirely filled with dead flies, so that, as a consequence, the walls decay and the insects drop out.

To Preserve Grain from Insects.—Place in the barrel which contains Rice, Wheat, etc., etc., a few branches of the common Elder. It will prevent their attacks, or drive them off if commenced.

Food for Young Trout.—According to Dr. Slack, the well-known proprietor of the Troutdale Fish-breeding Establishment, in New Jersey, the best substance with which to feed embryo trout hatched out artificially consists of beef's heart, prepared by first being opened that the coagulated blood may be washed away thoroughly, and then using only the pure muscular fiber. This is to be finely chopped into minute fragments, so as almost to form a pulp; and then, mixed with a little water, it is to be washed through a fine sieve of twenty-four threads to the inch, to prevent any minute particles from passing through.

Watering Plants with Hot Water.—It has lately been shown, by careful experiment, that sickly potted plants, even some that have almost died out, can be greatly benefited, and sometimes, indeed, entirely restored to vigor, by applying warm water to them instead of cold. In certain cases, oleanders which had never bloomed, or did so only imperfectly, after being treated with luke-warm water, increasing the temperature gradually from 140 degrees to 170 degrees Fahrenheit, produced the most magnificent luxuriance of bloom. Similar results occurred with an old plant of Hoya; and also with an India-rubber tree which had nearly withered away. In all these cases the application of water heated to about 110 degrees Fahrenheit, without any other precaution, causd a new and flourishing growth.

Transpiration of Leaves.—Von Pettenkofer, in the course of recent researches upon the amount of evaporation which takes place from the foliage of plants, ascertained in the case of an oak tree that this increased gradually from May to July, and then decreased till October. The number of leaves on the tree were estimated at 751,600, and the total amount of evaporation in the year at 539 cubic centimeters of water for the whole area of the leaves. As the average rain-fall for the same period was only 65 centimeters, the amount of evaporation is thus eight and a half times greater than that of the rain-fall. This excess must, of course, be drawn up by the roots from a great depth. The inference is derived from the above, that trees prevent the gradual drying of a climate by restoring to the air the moisture which would otherwise be carried off by drainage.

Cultivation.—Every earnest and careful cultivator must certainly know that deep and constant cultivation produces moisture. Every farmer can prove this for himself among his orchard trees or in his vineyard; in the cultivation of small fruits and of corn or potatoes, and all kinds of vegetables, he can prove in the most perfect manner the benefit of cultivation over irrigation in a climate like ours, and in the hottest and dryest summers too.

We base our arguments, be it understood, upon such lands as are properly plowed to start with, and upon all such soil its cultivation can be kept up all summer to great advantage; and any cultivator can take such soil, plow it in the very hottest and dryest weather of the summer—be it a cornfield, potato patch, peas, beans, or beets—and although the soil may be hot and dry as ashes when plowed, look on the crop the next morning and a heavy dew will rest upon it, giving a great refreshing, and the entire soil will seem to have been changed to one of a different kind; this continued, and it is far better for the crops than surface watering—the first keeps the soil open and fine, the other bakes the soil like a brick. Those who have never tried this had better begin.

Mulching.—When the soil of a garden or orchard is well cultivated, one of the best means of retaining the moisture to the soil and giving it to the plants and trees, is by mulching them.

We are much surprised that when great good is so easy to be accomplished, and when a crop can be so easily enlarged and improved at so little cost, that the plan of mulching is not more universal in our dry climate. Or-

chard trees, vineyards, blackberries, raspberries and strawberry plantations could be very greatly benefited by a regular system of mulching, as almost every grower has ample means at hand of various materials that are constantly going to waste that would answer the double purpose of mulching and manuring the soil.—*California Farmer.*

Calceolaria Culture.—I take my cuttings from good strong plants in October, (the end of the month, if the autumn is mild), about four joints in length, and prick them thickly under good hand-lights in plenty of sand and leaf-mold. I water them and shade for a few days, but never uncover them again until I pot them off in March. I have grown them in this way for seven years, and have covered them with nothing but an old sack, which sometimes was not removed for two months at a time, and I have not lost a single plant. Though they must have been frozen through this winter, I believe I can show as good a lot in 48's as any one.—*A. A., Halford House, Richmond, Surrey.*

Cotton Planting.—Messrs. Strong, Peck & Co. commenced planting cotton on the Buckley Brothers' Ranch, near Hopeton, on Wednesday last. They are in receipt of several tons of seed, by rail, from Alabama and Mississippi, of the most approved varieties, and will thoroughly test the question of cotton-raising in this section of the State. Theoretically, they have solved the problem to their complete satisfaction, and their efforts in the Merced bottom this season will give the matter a fair practical test. The land is of excellent quality. Those engaged in the enterprise are experienced in the business of cotton culture, and ample capital is at hand to give the experiment a fair opportunity to succeed, and we doubt not that they will settle the question by their experiment this season. Should the crop prove profitable, it will be the means of opening a traffic between California and the manufacturing States and countries of the world, that will bring to this coast untold millions of wealth in a very few years.—*Snelling Argus.*

Washing and Scraping Trees.—Washing and scraping are of great benefit to neglected trees; and washing, at least, may be done with advantage on all fruit. It destroys the young and almost invisible growth of mosses and lichens, kills dormant insects that have hidden in the crevices, and improves the tree generally. Various tree washes have been recommended, but there is probably nothing better than good home-made soft soap, thinned with water to work conveniently with a brush. Remove the loose scales of bark by means of a blunt scraper before washing.

Premium for Forest Trees.—In Nebraska every acre of transplanted forest trees exempts $100 from taxation—a wise provision, which it would be well for California to follow.

CENTRAL PACIFIC RAILROAD.

Passenger, Sunday Excepted	Express Train Daily	*June 1st,* 1871.	Express Train Daily	Passenger, Sunday Excepted
4:00 P. M.	8:00 A. M.	San Francisco	5:45 P. M.	12:30 P. M.
4:42 "	8:40 "	... Oakland ...	5:12 "	11:58 "
3:50 "	7:30 "	...San Jose...	5:30 "	12:15 "
7:58 "	12:15 P. M.	... Stockton...	1:43 "	8:35 "
9:35 "	2:00 "	..Sacramento..	11:45 A. M.	7:00 A. M.
	4:10 "	.. Marysville..	9:10 "	
	9:00 "	Sesma.....	4:20 "	
EASTWARD.				WESTWARD.
	2:20 "	..Sacramento..	11:45 "	
	5:25 "	 Colfax	8:45 "	
	1:15 A. M.	 Reno.....	1:00 "	
	9:10 "	.Winnemucca..	4:05 P. M.	
	12:00 M.	.Battle Mount.	1:25 "	
	4:40 P. M.	 Elko.	8:45 A. M.	
	6:10 A. M.	Ogden	5:15 P. M.	

SAN JOSE BRANCH.—**Leave** San Francisco at 9 10 a.m. daily, (except Sundays,) and 3 p.m. daily. Returning, **leaves** San Jose at 7 30 a. m. daily, and 3 50 p. m. daily, (except Sundays.)

OAKLAND BRANCH.—**Leave** San Francisco, *6 50, 8 00, 9 10, 10 20 and 11 10 a. m., 12 00, 1 50, 3 00, 4 00, 5 15, 6 30, 8 30 and *11 30 p. m. (10 20, 11 10 and 3 00, to Oakland only.)

Leave Brooklyn, *5 15, *6 30, 7 40, 8 50 and 10 00 a. m., 1 30, 2 40, 4 55, 6 10 and 10 10 p. m.

Leave Oakland, *5 25 *6 40, 7 50, 9 00, 10 10, 11 00 and 11 50 a. m., 1 40, 2 50, 3 50, 5 05, 6 20 and 10 20 p. m.

ALAMEDA BRANCH.—**Leave** San Francisco, 7 20, 9 00 and 11 15 a. m., 1 30, 4 00, 5 30 and 7 00 p. m. (7 20, 11 15, and 5 30 to Fruit Vale only.)

Leave Haywards, *4 30, 7 00 and 10 45 a.m, and 3 30 p.m.

Leave Fruit Vale, *5 25, 7 35, 9 00 and 11 20 a.m , 1 30, 4 05 and 5 30 p m.

* *Trains do not run Sundays.*

T. H. GOODMAN, General Passenger and Ticket Agent.

A. N. TOWNE, General Superintendent.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

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THE ORANGE-TREE—*CITRUS.*

The cultivation of the Orange (and Lemon) has of late attracted a great deal of attention on this coast, and it promises to form an important feature amongst our horticultural developments. The Orange and its kind has been cultivated for centuries past, and the fruit has always been considered highly delicious. As of all other varieties of fruit, so of the Orange, superior and inferior qualities are produced, but, while of other classes very inferior fruit can be put to some use, an inferior Orange is an entirely useless article, although some people will buy them no matter how poor the taste and flavor may be.

Very little attention has been given to the proper cultivation of the Orange, and much less to the selection of good varieties. A seedling Orange tree may produce a very fair fruit in a tropical climate, yet may not be adapted to our California climate, unless grafted or budded; and it is a fact beyond doubt, that on this coast the fruit of the grafted Orange is far superior to that of seedlings; there are also many other difficulties, such as climate and proper treatment.

About the classification of Oranges and Lemons, a considerable difference of opinion exists. We believe the most popular and the best, is that of Linne, who divided them into two groups, one comprising the Citrons and Lemons, the other the Oranges.

Of the Orange proper, the principal and most popular varieties are—

The *Citrus aurantium, var. dulcis*, or sweet Orange, which is supposed to be a native of China, but has been so extensively cultivated in various parts of the globe and for so long a time, that its nativity is attributed erroneously to other localities.

Citrus aurantium var. valgaris, a bitter Orange, (German Pomeranze,) is also supposed to be a native of China and India. The leaves are larger and of a much darker green than the former, and the tree grows thriftier and larger.

Citrus deliciosa, (Mandarin Orange, sometimes Tangerin Orange,) is a native of China, and its fruit is considered the finest in appearance as well as in flavor. Thorns grow upon its branches, while both of the former varieties are thornless.

Citrus decumana—Shaddock—is also a native of China. The fruit is larger than that of the others, and its skin is much thicker.

Besides these, we have the Sicily sweet Orange, the Italian, the Los Angeles, etc., but all of these names signify nothing more than the locality where they have been growing. However, the Oranges of Sicily have acquired some peculiarities by this time, that may entitle them to some distinction, and we are not inclined to find fault with the belief of some, that the seedling of the Sicily sweet

Orange will produce a better fruit than that of any other variety.

Oranges may be grown from cuttings, but we do not believe any more in this method of propagation than we do in the growing of Cherry trees from cuttings, which is also practicable.

The best way to obtain Orange trees is to plant the seeds of ripe Oranges thickly in pots or boxes; the young plants will make their appearance in from four to six weeks, if kept under glass. Some prefer Lemon-seed, others some other variety of Orange, but, while many of our gardeners are much in favor of Lemon-stocks, we do not consider their preference conclusive. Our readers will bear in mind that our florists do not cultivate Orange trees for the fruit but for the flowers, which are valuable for fine bouquets, (indeed there is nothing more appropriate for this purpose than the Orange-blossom,) and to sell the trees if a good price can be obtained. Now from our own experience we can state, that we have grown beautiful flowers from Orange trees which were raised from Los Angeles Oranges, in three years from the seed, and undoubtedly would have obtained some good fruit if we had permitted some of the blossoms to remain on the tree; but we also ascertained that these seedlings were not well adapted for forcing, that is, while we obtained two or three crops of blossoms from the Mandarin or the sweet Orange, we did not succeed in having more than one crop from the seedlings. This question is open to much argument. We prefer budding or grafting, and to this end we recommend potting the young plants as soon as they have attained the height of from four to six inches, into three inch pots; the soil should consist of one part of strong loam, one part of old rotten cow-manure, and one part of leaf-mould; these should be mixed with one fourth of strong sand and about one fiftieth part of bone-ashes; the plants should be kept moderately warm and receive a good supply of water. They will soon make a good start. After they have made their second growth, they should have less water, plenty of air and a good rest. When the wood has every appearance of being ripe, which will be after four or five months of rest, the trees should be repotted into four inch pots, have plenty of water, and be kept close again. When they have made their third growth, subject them to the same treatment as after the second growth; then repot into five or six inch pots, and after giving them the benefit of another season's growth, the stocks will be strong enough to be budded or grafted. This operation must be performed after a good rest and when the young trees are about to make their next growth. After budding or grafting, the plants should occupy a shady place, with considerable warmth and moisture.

The treatment of grown-up and bearing Orange trees cannot be prescribed exactly. We must take into consideration that the Orange tree is really an evergreen and frequently blossoms, young fruit and ripe fruit are seen on the tree at the same time. This would indicate that the Orange tree is continually in vegetation, and we know of some trees in this city which are hardly ever without some blossoms; yet the Orange tree will flower and grow more in one season than in another. One rule will work well in all cases, and that is, not to water until the ground shows signs of being dry; another indication of want of water, is, that the ends of the leaves can be bent in without breaking.

Sickly Orange trees may be easily restored to vigorous life by giving bottom-heat, and cutting back the branches to sound buds.

In conclusion, we would recommend the fastest growing varieties for stock upon which to work grafts or buds, and these are undoubtedly the bitter Orange *(C. vulgaris)*, and the Shaddock *(C. decumana.)*

Mosquitoes.—These annoying insects will soon be hunting for their prey. They are effectually expelled from a room by the evaporation of a small piece of gum camphor placed in a tin vessel and held over a lamp or candle. The mosquitoes will return no more that night even if the windows are left open. The vessel should be occasionally taken from over the flame to prevent the ignition of the camphor.

CULTIVATION OF THE POPPY IN CALIFORNIA.

It is all important to the Horticultural and Agricultural people of our State that they should diversify their productions, and not, as heretofore, depend upon one or two staple articles alone. California is peculiarly adapted to a varied cultivation; as she has almost any required climate and soil. The grains and fruits of the temperate zone are here found growing side by side with the tropical fruits of the Equator. All of Nature's productions seem to find, somewhere within the borders of California, a congenial home; growing so luxuriantly and yielding so profusely as never to find time in which to realize the fact, that to them, this is a foreign land. In this paper I propose to direct attention to the cultivation of the Poppy in California, hoping thereby to induce our cultivators to add one more plant to their list of crops.

The Poppy, as is well known, is the plant from which we derive the valuable product called Opium. The plant, like many of our most useful medicinal ones, is a native of India, Persia and China, although it has readily adapted itself to many parts of the world, and is to be found growing wild in Europe, and even in the United States.

There are many varieties of it, of which the black and white are the principal ones. The black is mainly cultivated for its seeds, from which an oil is extracted by expression, having much the same properties as olive oil. Large quanities of seed are raised in Europe for this purpose. The White Poppy *(Papaver somniferum)* is, however, of most value, as from it the main supply of opium is obtained. It is an annual plant, having a round, smooth, erect, glaucous stem, which grows to the height of from two to six feet, the stem having a number of side branches which bear the flower heads, as does the main stem. The leaves are large, being variously notched and lobed ,clasping the stem at their base. The flowers are terminal, that is to say, only found on the ends or apices of the stem and branches, being very large and of a white or silver-gray color. All parts of the plant contain a white, narcotic juice, but it is in the capsule (the seed head) that we find the largest amount of narcotic sap, or juice.

The mode of collecting the opium is, (a few days after the fall of the flower-leaves,) to make a number of horizontal incisions in the capsule, which is best done with a sharp and slightly curved knife, care being taken not to penetrate the cavity of the capsule. Immediately after the incision, a white juice is poured out and appears in small drops around the edges of the wound. The plants are left in this condition for twenty four hours, and then the juice, which by this time has become slightly hardened, is scraped off by the means of blunt knives. Each Poppy-head will yield this juice but once, and then only from a grain to a grain and a half of opium is obtained. It requires no further manipulations after its collection than being beaten into one mass, and placed in jars for preservation.

The cultivation of the Poppy requires no special care, and it can be grown in almost any kind of soil, although it prefers a moderately dry situation, and where it can obtain a pretty high temperature.

We have many parts of the State well adapted to the cultivation of this plant, and we hope to see some of our horticultural friends try the experiment. On almost every farm there are some spare, waste places, which are unfit for the cultivation of grain or fruit, that might be devoted to the growth of the Poppy.

Crude opium sells in this State for about $6 per pound, and large quantities of it are imported annually. It is an article in steady demand, and must of necessity command a liberal price. C. A.

We have given the above article space in this Journal, not to endorse all the writer says, but to encourage, among our Horticulturists and Agriculturists, a spirit of inquiry and research as to the capability of a varied cultivation in California.

We are under the impression that the cultivation of the Poppy will in no way prove

remunerative on this coast. Our correspondent is in error, when he states that the Poppy requires but little cultivation; on the other hand it needs a great deal of care and attention, as it is naturally a delicate plant, the slightest frost or too long continued heat often destroying an entire crop in a very short time. In the Orient, from whence our opium is obtained, labor is plentiful and obtained at a very low rate, ranging from ten to sixteen cents per day; and the cost of producing a chequi of opium (one and two thirds pounds) is even then, without counting the cost of land, labor of preparing the soil, etc., about one dollar and sixty cents. With these facts before us we cannot believe that the cultivation of the Poppy plant in this State, would result in profit to the cultivator.—Ed.

REDWOODS.

(*Sequoia sempervirens*, Endl.)

Extract from a paper read before the California Academy of Natural Sciences, October 16th, 1865,

BY PROF. H. N. BOLANDER.

This mighty tree belongs exclusively to the foggy regions of the Coast Ranges and the underlying metamorphic sandstone, for wherever either of these conditions is wanting, this tree does not exist. From the northern boundary line of the State down to the head of Tomales Bay it forms a continual forest, increasing in width northward. At Tomales Bay the chain is interrupted by a small bed of lime-rock. The interruption extending from the lower foot-hills of Tamalpais down to Belmont, is undoubtedly owing to the lowness of the hills. A connecting link is found, however, on the Oakland hills. That grove of redwoods, now almost entirely destroyed, affords the strongest evidences of the dependency of that species on the prevalence of heavy mists. From Belmont to a few miles below Santa Cruz is another narrow, continuous chain, occupying mainly the leesides of the most western ranges and the deeper gulches eastward. From near the mouth of Salinas River to the head of Carmelo Valley, another long interruption is caused by a bituminous slate. The absence of redwood in this long interval can hardly be ascribed to any other cause, for it is known that Monterey and the adjacent regions are subject to heavier fogs than Santa Cruz. *Pinus insignis* and *Cupressus macrocarpa* occupy here those portions naturally belonging to the redwood and *Tsuga Douglasii*. Further south, from the head of Carmelo Valley to San Luis Obispo, the most southern limit, redwood occurs but sparingly, forming nowhere extensive groves. Associated with the redwood we find *Tsuga Douglasii*, a tree of a wide range, *Torreya Californica*, *Arbutus Menziesii*, *Quercus densiflora*, and in Mendocino County *Abies grandis*, Doughl. There are also some shrubs and herbaceous plants truly characteristic to them, the shrubs increasing as underwood northward, belong mostly to the Ericaceous family. It is a noteworthy fact, that the arborescent growth of the leeside of the first range of hills generally consists, almost exclusively, of *Tsuga Douglasii*, and that this tree forms the outskirt east and particulary westward. In Mendocino County *Abies grandis* unites with it for the same cause; there both trees form a dense belt, facing the ocean, and are encroaching fast on the redwood. In fact, the western portion of those redwoods show this encroachment most strikingly by a total absence of young redwood, and a dense, almost impenetrable, undergrowth of the two-mentioned species. The order of things is, however, reversed wherever the redwood has been cut. Its roots are imperishable, and as soon as the tree is cut they sprout and cover the soil rapidly to the exclusion of every other species—none being of so rapid a growth. The indestructibility of the roots prevents the clearing of such land; even large trunks cut down cover themselves, within two or three years, so completely with sprouts that they are hardly seen. The entire after growth now found on the Oakland hills, is owing solely to the indestructibility of its roots and stumps. The tenacity of life in this species, which is of rather rare occurrence in coniferous trees, shows itself also in the resistance it offers to fire, so frequent in

those woods. Trees that have been bereft completely of their branches by fire, cover themselves in a few years entirely with young sprouts, giving the trunks the appearance of pillars, or reminding one of those old trunks covered with *Rhus toxicodendron* in the East. Fire is destructive to the young trees only; after they have obtained a thickness of two or three feet they are not liable to perish.

Another great beneficial feature in this species is the great power it possesses in condensing fogs and mists. A heavy fog is always turned into a rain, wetting the soil and supplying springs with water during the dry season. Springs in and near the redwoods are never in want of a good supply of water, and crops on the Coast Ranges are not liable to fail. The year of 1864 has proved my assertion beyond doubt; this fact is generally known—a great deal of land has been taken up since. It is my firm conviction that if the redwoods are destroyed—and they necessarily will be, if not protected by a wise action of our Government—California will become a desert, in the true sense of the word. On their safety depends the future welfare of the State; they are our safeguard. It remains to be seen whether we shall be benefited or not by the horrible experience such countries as Asia Minor, Greece, Spain, and France have made, by having barbarously destroyed their woods and forests. But with us here it is even of a more serious nature; wise governments would be able to replace them in those countries, but no power on earth can restore the woods of California when once completely destroyed!

Ants.—A speedy clearance of places infested by ants may be effected by simply pouring a small quantity of paraffin into the holes and places infested by them. They disappear almost by magic.

J. Loder, Woodbridge.

I have found the following a most effectual remedy for destroying ants in cucumber houses: Place in a number of tea cups a mixture of brown sugar and warm water, sufficiently thick to prevent the ants from getting out when once in. The cups must be rather more than half-filled and placed where the ants congregate. In this manner I have destroyed all the ants in my houses in one night.

Robert Smith, Silchester Nursery, Notting Hill, W.

POPULAR BOTANY.

CHAPTER IX.

Having given a brief description of simple leaves, we shall now proceed to give a like description of those called compound. The only difference between these and simple leaves, is, that the divisions are generally supported by separate stalks united to the main stalk or petiole; and at the close of the season of growth, they fall independently of one another. These divisions are called *leaflets*, (little leaves.)

A feather-veined leaf, if compound, is called *pinnate*, and when again divided, it is said to be *bi-pinnate*, and if divided for a third time, it is termed *tri-pinnate*. In case the leaflets are even in number along both sides of the petiole, but having none at its apex, the leaf is termed *abruptly-pinnate;* when, on the other hand, the petiole has an odd leaflet at its apex or point, it is then called *impari-pinnate*. The number of leaflets vary to a great extent; some trees and plants having a large number, and others a very few. Thus we have *pinnately* seven, five, etc., in addition to *bi.* and *tri*-pinnate, according to the number of leaflets present. Pinnate leaves having three or five leaflets, are sometimes called *ternate* or *quinate;* these terms are also applied to palmately-compound leaves.

A compound palmately-veined leaf has all of its leaflets attached to the apex of the petiole, making what is called a *digitale* leaf, from its resemblance to the outstretched fingers of a hand. These leaves are termed palmately (or digitately) tri-foliolate, five-foliolate, etc., corresponding to their number of leaflets.

Leaflets have all the characteristics of simple leaves (which in fact they are) in form and division, and we use the same terms in their description. The blades of leaves as a general rule are horizontal, presenting, as we have said before, one surface to the ground and the other to the sky; and we find the cells on the two surfaces differently arranged to meet this requirement. If the leaf should be reversed, and prevented from resuming its normal po-

sition, we would have decay and death as a natural result. While this applies to the great majority of plants, there are exceptions, such as in the case of the *Eucalypti*, (Gum trees of Australia,) which bear their leaves in a vertical position, so that instead of their surfaces, it is their edges which present themselves to the ground and sky. This is caused by a twisting of the base of the leaf, or the petiole. Succulent leaves (of which the many species of *Mesembryanthemum*—Ice-plant—afford a good example) are of various unusual shapes, and have no well defined surfaces. The veins are often hidden by the great amount of parenchyma, or concealed by the thickened and opaque epidermis. Where the leaves produce no green pulp, they become scale-like, as in parasitic plants, and no longer perform the common office of leaves. The leaves of some aquatic plants are almost, if not quite destitute of parenchyma, as in the *Ranunculus aquatilis*, *Myriophyllum*, etc. Sometimes the leaf-blade is wanting, and then we find its office performed by the petiole or by the stipule.

We shall now pass on to the consideration of the appendages of leaves, such as the petioles and stipules. The petiole is the stem of the leaf, and serves to unite it to the body of the tree or plant; it is usually round and having a channel way on its upper side. At times we find it furnished with a small border, having somewhat the appearance of a wing, and often extending along its entire length; as in the Sweet-pea, a plant in common cultivation. Umbelliferous plants have the base of the petiole expanded into a broad, thin sheath, and in many of the Endogenous plants, more particularly the grasses, the petiole and leaf have no clear distinction, the lower portion of it, which is technically called the petiole, being a sheath and embracing the stem of the plant. In the Papilionaceous or Pea tribe the apex of the petiole is formed into a tendril, which, laying hold of projecting points of walls or the branches of trees, sustains the plant.

In addition to the petiole the leaf has, in certain classes of plants, another appendage called the stipule. It is situated at the base of the petiole on each side, and is a small, leaf-like body, having all the texture, color and venation of the true leaf. Leaves having these stipules are said to be *stipulate*, while if they are absent, the leaf is termed *exstipulate*.

All leaves have their points of attachment either to the stem or trunk of trees, plants, etc.; this is called their point of *insertion*. This is the apparent relation which the leaves bear to the main plant, but it will be remembered that we stated, in a former chapter, that leaves are but the lateral expansion of the bark, and therefore the expression, "point of insertion," is not really correct. It should rather be called its "*point of departure.*"

Leaves are called *radical*, when they spring from the stem at or beneath the surface of the ground; they are so called from having the appearance of growing from the roots of the plant. Those that are given off from the main stem are said to be *cauline*, and those of the branches, *rameal*. Leaves that stand upon the base of flower-branches are termed *floral*, and those directly at the base are called *bracts*.

To the first leaves of a plant the name *cotyledons* has been given, and they differ very materially from all of the subsequent ones, both in shape and texture. The next leaves which make their appearance bear,—at least to a certain extent,—the characteristics of the plant to which they belong, and are called *primordial;* both these and the cotyledons die away as soon as the ordinary leaves of the plant are developed in sufficient quantity to maintain the life of the plant,

Grafting Orange Trees.—Mrs. I. writes that she had seen something in the *Rural New Yorker* about grafting orange trees, and adds:—"I acknowledge my ignorance, for I did not know that they required grafting. Will they not bloom if not grafted?" Yes, they will bloom if not grafted. But, as a general thing, they will come into bearing in less than half the number of years if grafted. If scions are taken from a bearing tree, they will usually produce fruit in one or two years; but a seedling orange tree is often ten years old before it bears fruit.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION IX.

We have already stated that a Vegetable Garden, Orchard and a small Vineyard are very necessary and very desirable adjuncts to a country residence, wherever sufficient ground is available. We will now enumerate such varieties of fruits and vegetables as may be most successfully cultivated for home use.

In regard to the Kitchen Garden, in previous numbers of our Magazine, under the heading of Work for the Month, we have instructed as to the proper time for planting, and the necessary management, after that operation, and we shall continue to do so in the future. Success depends to a great extent on observance of the proper season for planting, on the thorough preparation of the soil, and on keeping the ground under a high state of cultivation.

It is best to divide the Kitchen Garden into four squares by convenient walks of about four feet wide. These squares should be subdivided into parallel beds of about five feet wide, with narrow paths which should be on a level with the beds themselves; an arrangement of this kind will facilitate the weeding of the beds, the working of the ground, and the gathering of the vegetables without tramping all over. The seeds should be purchased of reliable seedsmen.

The following seeds should be planted in a frame early in the spring, and the young plants should be transplanted into the open ground when four or five inches in height:

Cabbage, Cauliflower, Celery, Egg-plant and Tomatoes.

Of Asparagus and Rhubarb, it is advisable to purchase roots two years old.

Lettuce, Onions, Parsnips, Parsley, Radishes and Turnips may be sown broadcast and gently covered in with a rake.

Beans, Corn, Cucumbers, Melons, Squashes and Pumpkins should be planted in hills.

Beets, Peas, Spinach, etc., in drills.

These are the most popular varieties of vegetables, and are of easy culture.

Very useful herbs for the kitchen are—Dill, Sweet Fennel, Sage, Sweet Marjoram and Thyme, all of which may be raised from seed, or well grown plants may be purchased very reasonably.

It is well to state here that no shade or fruit trees should be grown in the Vegetable Garden, as they are in many respects detrimental to the growth of vegetables; but we have often seen Gooseberries and Currants cultivated in a row within two feet of the walks, and Raspberries and Blackberries in the outside borders, and this arrangement will do very well unless a certain piece of ground is devoted to the culture of small fruits.

The Currant requires a rather cool climate, but will do very well in a hot atmosphere, if partially shaded by a fence or a row of trees. The best variety, we believe, is the Cherry-currant; the best mode of cultivation is in the shape of a small tree with one trunk.

The Gooseberry will do well almost everywhere, unless the ground and climate is too cold. The Hawton seedling is the best and most prolific American variety; the large English varieties produce a much finer fruit, but are not so well adapted to our climate. Gooseberry as well as Currant bushes may be made very ornamental by cultivating them in the shape of a dwarf tree, which also facilitates the gathering of the fruit.

Raspberries require a warm climate and considerable moisture. The stocks make their growth in one year, and produce their fruit in the next, after which they should be cut out. The best variety is the Red Antwerp.

Blackberries require a similar cultivation. Our best variety here is the New Rochelle, or Lawton.

All small fruits will do better with occasional irrigation until the fruit has ripened, and in order to produce a good growth of young wood for the coming season.

A Strawberry-bed should not be omitted, as it is the earliest of the small fruits. Irrigation and mulching are indispensable for their successful cultivation. The best varieties are the British Queen, Longworths, Prolific and Jocunda.

One of the most desirable fruits is the Grape, and its excellent qualities for the table, for preserving and for wine-making, certainly entitle it to most extensive cultivation. Grape-vines may be planted in rows, forming a vineyard, or they may be trained over an arbor. For amateur gardeners, the best are the Black Hamburg, Royal Muscadine, Chasselas de Fontainbleau, Red Chasselas, Zinfindal and Feber Szagos. There are many more very excellent varieties, but for our purpose the above collection will be ample. For those who can appreciate a peculiar aromatic flavor, the Isabella and Catawba are very desirable. Grape-vines should not be expected to bear before the third year, and the pruning of the vines should be fully understood.

The Orchard should contain all the various fruits, and the varieties should be selected so as to have them early and late.

The first fruit of the season is the Cherry, and who would willingly be without it? The appearance of the tree is highly ornamental and its fruit most delicious. A moderately warm climate is necessary to bring it to perfection. The best varieties are—Werder's Early Black, Jenny Lind, Royal Ann, Yellow Spanish, Elton, Gov. Wood, Black Eagle, Reine Hortense, etc.

After the Cherry comes the Apricot, which requires a rather warm exposure. The Moorpark variety is considered the best.

Next in order of the season comes the Peach, although a few early Pears and early Apples may be obtained in advance. Like the Apricot, the Peach is grown most successfully in a warm climate, and in such situation we would rather dispense with any other fruit. The cultivation of the Peach tree is comparatively very easy, and often seedling trees bear better fruit than budded ones. Peach trees, in our opinion, should be well cut back while young, and should receive a good manuring after occupying the ground for five or six years. The best varieties are—Early Crawford, Hale's Early, Early Strawberry, Morris' White, Heath Cling, and Stump of the World.

Of Nectarines, the Boston and Large White are excellent varieties.

The Plum is a very prolific and much appreciated fruit. There are many good varieties cultivated, and it is difficult to say which are the best; the Green Gage, Washington, German Prune, Jefferson, Egg and Bradshaw are all very excellent.

We now come to the Pear, in the cultivation of which California stands unrivaled. It seems to thrive well in every locality in the State.

Good early varieties are—the Madeline, Bartlett, and Dearborn's Seedling; of fall Pears—the Flemish Beauty, the Seckle and White Doyenne are excellent; and of winter Pears—the Winter Nelis, Beurre Easter and Glout Morceau are probably the best.

The most important of all fruits is the Apple, which is also well adapted to our Californian soil and climate, but more particularly to the foothills of the Sierras.

For early Apples, the Red Astrachan and Early Harvest; for autumn, the Gravenstein, Fall Pippin and Rambo have no superiors; and for winter, some of the best are the Yellow Bellflower, Esopus, Spitzenburg, Jonathan, Golden Russett, and White Winter Pearmain.

The Orchard may also contain the Quince, Fig and Almond trees, yet we have frequently seen these trees, and also the English and Black Walnut trees, cultivated with very admirable effect in portions of the ornamental grounds.

We have frequently noticed that some nurserymen are in the habit of stating to the public that these trees are grown without irrigation. We attach very little importance to that assertion, and we are furthermore convinced that bearing fruit trees will produce much better fruit if assisted by one or two effective waterings before the fruit has attained its full size, than if entirely dependent on Nature's own supply. However, we shall endeavor to give this matter some special attention at an early day.

The orchard grounds should be plowed as deeply as possible, the holes for planting

should be dug from two to three feet square and deep; the top-soil should be put into the bottom, and the sub-soil spread on top; a small quantity of old rotten manure should be supplied to every tree, and should be thoroughly incorporated with the soil. The roots of the trees should be kept free from the manure, and after planting a good watering should be given. They should be cut back considerably and the surface around them mulched. Trees purchased in good condition and planted out as directed above, cannot fail to make a very satisfactory growth during the following season.

It will hardly be necessary for us to state that Orchards and Vineyards should be laid out in rectangular lines. Trees should be planted twenty feet apart and Grape vines six feet. This would give 135 trees to the acre, or about 1,200 Grape vines.

We like to see every tree provided with a stake, but it is only done in rare cases. The necessity of stakes for Grape vines is still more apparent, but very few seem to take the same view or else neglect to do so.

A Vineyard provided with proper stakes is very ornamental to a country residence, while without them, both Vineyard and Orchard have an unfinished appearance.

In concluding this article, we feel as if we had not confined ourselves, strictly speaking to Ornamental and Landscape Gardening; but the Orchard and Vineyard planted by the amateur gardener for the embellishment and supply of his home, necessarily form a part of Landscape Gardening, and while we admit that the practical instructions which we have given do not come strictly within the province of Lansdcape Gardening, yet the arrangement certainly does.

"HOLES IN THE POCKET."—The *Chatagua Farmer*, in an article, "Holes in the Pocket," cites the following "holes" common on many farms: Shallow plowing; planting poor seed; turning out good stock to mix with poor; buying what you could just as well make in leisure hours; keeping bad fences and bad gates, and thus having bad neighbors; spending time and money in drinking shops, and at the village store; leaving tools thrown about here and there; keeping worthless dogs; wearing fine clothes; and apeing manners that do not belong to a farmer.

NOTES OF A TRIP TO LAKE TAHOE.

Being engaged in the business of pisciculture, and desiring to procure trout ova from Lake Tahoe for that purpose, I proceeded thither from San Francisco on the 28th of April last.

On my arrival at Truckee, my first forenoon was spent in viewing Donner Lake, which is a fine sheet of water situated about half way between the Summit Station and Truckee and within view of the railroad. It is about three miles in length by a mile in width, and is full of excellent trout, though they are smaller than those of Lake Tahoe; some say they are finer in flavor.

I had a letter of introduction to Mr. Grant, who keeps the hotel at the Lake, and who has boats and provides good fishing for the visitors stopping at the hotel. He has commenced raising trout, and intends embarking in the business on a larger scale in a short time. Having procured what information I could on the subject, I returned to Truckee, and in the afternoon walked out to Corner Bros' establishment, about four miles and a half from that place. They have some five or six ponds on the river bank full of trout of different ages, from the yearling, to the four year old fish weighing about one and a half pounds. These gentlemen obtain their ova from Lake Tahoe, trapping the fish in a creek at Sugar Pine Point, about eight miles from the mouth of the Truckee River.

On my return to Truckee, I found the owners of the mill above the town had put in a very good fish-ladder at their dam. I intended going by stage to Tahoe City, but found there was no regular conveyance started as yet.

During the next day, I happened to meet Mr. Buck and Mr. Campbell, who intended opening a stage route to Cornelian Hot Springs and thence to Glenbrook by steamer, from whence the passengers can go by stage to Carson City in about two hours, and as on the next day their first trip was to be made, these gentlemen gave me an invitation, to

take a pleasure excursion to Glenbrook and back. I gladly availed myself of their kind offer being one of twelve who had been invited. We started about eight o'clock in the morning, crossing the river and surmounting a steep hill on the opposite bank, we soon entered a considerable flat, (thickly covered with grass and having a good stream running through it,) across which we could see the wooded summit over which the road passes to the Lake. A short way up the ascent we passed through an old mining district, about which, in days gone by, there was quite an excitement. The ruins of about a dozen log houses and shanties are all that now remain to tell the tale of disappointed hopes.

On the road down from the summit we could occasionally catch glimpses of the Lake between the branches of the pine trees which cover the descent. After about half an hour's ride down hill on a very good road, we arrived at the edge of the Lake and beheld, for the first time, this expanse of water, about twenty seven miles long by seventeen wide, surrounded by mountains whose tops, ten thousand feet above the level of the sea, were covered with snow.

At a short distance from the Springs our attention was directed to the stone pillar which marks the boundary line between the States of California and Nevada. Arriving at the Hot Springs' Hotel, built and owned by Mr. W. B. Campbell, we had barely time to take a peep at the Springs, having the promise of a steam bath on our return from Glenbrook, and to imbibe a draught of invigorating fluid, of which a good stock is kept by the worthy Billy, when the shrill whistle of the steamer hurried us on board the fairy craft. The water of the Lake is very clear, and we could see bottom where it was over a hundred feet deep. After losing sight of the bottom, the water changes from green to a cerulean blue, which reminded me of the color of the water amongst the West Indian Islands.

On our trip across we had pointed out to us the various places of interest on the Lake, Tahoe City and the mouth of the Truckee River, Cornelian Bay, Cave Rock, and the entrance to Emerald Bay. After a voyage of about two hours' duration we arrived at Glenbrook, situated about the center of the eastern side of the Lake, in a small bay. It has a fine hotel, kept by Mr. Saxon, which was built in olden times, when the travel over the mountains was made in stages. Glenbrook is about fourteen miles from Carson City, and all the lumber from the Lake for Carson and Virginia Cities finds its way over the ridge through this place.

On our walk from the margin of the Lake to the hotel, we had pointed out to us Painted Rock. The likeness of Shakespear was plainly delineated on the face of this cliff. Just after having dined, the stage from Carson arrived, (driven by Hank Monk, of Greeley renown,) with passengers from the Truckee; and as they had taken their dinner, we started on our homeward trip, making the voyage in about one and three quarter hours. On our return to the Hot Springs I found that the steamer had to go to Tahoe City that evening; and that place being my destination, I availed myself of the opportunity. It being about eight miles, it took us a little over an hour to get there. Having a letter of introduction to Mr. Pornin, the owner of considerable property in Tahoe City, and one of the best fishermen on the Lake, I called on him and was kindly received.

Tahoe City is situated on the north western corner of the Lake, and is built at the mouth of the Truckee. It has a fine large hotel which cost some $20,000, and is how owned by a joint stock company under the management of Mr. Lyons. Like almost every other interior California town, Tahoe City consists of a hotel, store, saloon and livery stable with some scattered private residences. The greater part of the inhabitants are fishermen, and own boats which they let to visitors during the summer months, in which short period they earn all the money they get in the year. A Mr. Burke there has a steamer on the stocks, and when launched she will be the largest steamer on the Lake, and able to withstand the rough weather. Cascade Lake,

situated about a mile and a half from Lake Tahoe, is above Emerald Bay. The small creek through which it discharges itself into Lake Tahoe, for about a mile of its lower course, precipitates itself down a steep descent, forming a succession of small but beautiful waterfalls. Above this portion, the banks of the stream are more level, and every pool is filled with trout of small size compared with those of Lake Tahoe.

Cascade Lake is embosomed in an amphitheater of mountains, and is oblong in form. It is about a mile in length and three fourths of a mile in width, deriving its name from the stream that feeds it, and which falls in a sheet of foam almost from the snow which covers the tops of the mountains that overhang it. On returning I met old Capt. Dick, who takes care of Ben Holladay's place, at Emerald Bay. He is a fine specimen of the "old salt," having served in both the English and American navies, and visited almost every part of the world. During the winter months, when hemmed in by the snow, he has whiled away his time in building a full-rigged ship, about seven feet in length, with figures of the officers and men at their proper stations; the cabin is appropriately fitted up, the cook at his galley, which is complete in its fixings; she is fully armed with guns, boarding-pikes, etc., and has a clock-work engine propeller etc., etc. It took him about four years to finish the work. Mr. Holladay owns a nice little steamer on the Lake, she is said to be very fast, and is called the Emerald.

From Tahoe City I went back to the Hot Springs, enjoying the privilege of the bath. The temperature of the water is about 150 degrees and the bath house is fitted up so that you can have steam, shower or hot baths as you please. Mr. Campbell, during my stay with him was also adding a swimming bath. He has induced a large amount of travel by his new route to Virginia and Carson, giving his customers the benefit of the Lake scenery and travel by daylight over the most beautiful part of the journey.

Having accomplished my business, that of procuring trout ova for the California Acclimatizing Society, I left that beautiful place for San Francisco with sincere regret, hoping at some future time to return and explore sundry portions of that country at present but little known. JOHN WILLIAMSON.

PRIZE ESSAY ON WINE-MAKING—MAKING AND PRESERVING.

BY A. C. COOK, COVINGTON, GA.

Awarded First Premium at the Georgia State Fair, 1870.

Wine making from remote antiquity has ever been regarded as one of the mysterious arts, and comparatively few experts, until the fifth decade of the nineteenth century, could boast of producing wines of the finest quality. Those that excelled in this, as in all other arts, were extremely careful to keep their process a profound secret. The knowledge thus obtained by experiment and experience varied widely in different countries, localities, and with different varieties of grapes and qualities of soil. The art of improving wines by mixing different qualities (and adding honey to the must before fermentation, to strengthen the wine,) of wine was well understood by the ancients.

The results obtained from long practice and observation, were not derived from any knowledge of the vine or its fruit, but from careful observation of the fermentation of the juice of the grape, under different conditions of temperature, climate and atmospherical influences.

The process of extracting the juice from the grape until the early part of the past century, and even at the present time in many countries, was of the most primitive character. The grapes were placed in a large tub or vat with a perforated bottom for the must (juice) to flow into a receiving vessel, and trodden out with the naked feet. Frequent mention of this process of extracting the juice of the grape is to be found in the sacred writings and in profane history.

Previous to the art of distillation, nothing stronger than wine of twelve per cent. alcohol was known. At this point the alcohol

kills the yeast fungi (ferment principle), those modern sweet wines of Italy, Spain, Greece, and Sicily, which contain from fourteen to twenty four per cent. of alcohol are produced by the mechanical addition of brandy, generally made from the same grape as the wine. Most of the grapes of these countries and Southern Asia, contain a large excess of sugar, and are generally deficient in albumen, gluten and nitrogenous compounds. The excess of sugar, also preventing the completion of fermentation, and resulting in a naturally sweet wine, and known by different applications, as—Tears of Christ, the Ancient Maroulan, St. John, Thasos, etc.

Various celebrated brands of wine were thus obtained by the ancients, according to the qualities of soil, climate, varieties of grapes and modes of manipulation.

The list of ancient wines number seventy eight, besides a large list of inferior grade. The list of modern wines, of standard reputation, comprises three hundred and sixty, besides numerous brands of local character. In the United States we have, as yet, but few brands of superior excellence. Sufficient progress in this direction, has already been attained to demonstrate the capacity of our soil and climate to develop the finest qualities of native wines. From the Norton's Virginia Seedling, Delaware, Herman, Herbermont, Cynthiana, Scuppernong, and others, we have produced wine that will compare favorably with the most celebrated wines of Europe. Modern agricultural chemistry has thrown a flood of light on the science of wine manufacture, by revealing the constituent elements of the must of the grape, thus enabling the vigneron to develop wines of superior excellence, which under the old methods would result in wines of inferior quality.

It is not intended in this essay to enter into an elaborate explanation of the ancient modes of wine making, or into the minutiæ of modern procedure; the object is to give practical illustrations of the best method of making and preserving wine. It has been known for the last half century, that wines are matured *only* by oxidation of the soluble compounds held in solution as albumen of the gluten; as long as this remains in solution, the wine is liable to become turbid, to fret, and to deposit sediment (lees,) and consequently remains unsaleable. Under the old process, oxidation was slowly accomplished in cool cellars, by the oxygen of the air (the albumenous parts remaining after fermentation,) slowly permeating through the wood walls of the cask and frequent rackings. Changes of temperature being the existing cause of disturbance, a rise of temperature expelling the carbonized air, and a fall of the mercury causing a shrinkage of the wine and consequent absorption of air through the pores of the wood; thus every change of atmosphere contributes to the slow oxidation and maturity of the wine. Many of the choice brands of European wines require from four to ten years to complete their maturity by the old methods of treatment.

Large amounts of wine are thus annually lost by evaporation, leakage and the liability to acidification and various other wine diseases; add to this interest on capital and cost of labor, renders the wine enterprise one of great uncertainty under the old modes of manipulation. Under these considerations the question naturally arises: How can we overcome this enormous loss of time, capital, evaporation, leakage, labor and inferior quality of wine? Modern chemistry has solved the principle, (or agent) but failed to point out the mechanical application. Mr. R. d'Heureuse, of California, conceived the project of improving the fermentation of wines and other fermenting fluids, by forcing pure air through the must or other fluids to be fermented; and at a suitable temperature to convert all the sugar into alcohol by fermentation, or to purify from albumenous matter, saccharine and other organic fluids, without fermentation by this process, at a certain high temperature, rendering them free from deterioration by elementary exposure.

This is accomplished by means of a force air pump in connection with a rubber hose and a perforated metallic pipe mouth-piece or plate. The pipe or mouth-piece lowered

to the bottom of the cask or vat, the impelled air causes a violent commotion, and an intimate contact of oxygen with every particle of the fluid. By this method, in from five to fifteen days, all the albumenous parts of the gluten, are rendered insoluble, and at the same time the sugar is transformed into alcohol. The question has been for many years propounded in wine countries of Europe, viz: "By what means can speedy maturity and stability be imparted to wine, so as to save the immense loss of labor, interest, storage, leakage, and evaporation?

The question has been solved by the patentee of air-treatment. The discovery made is, that the oxidation of the gluten, which takes place slowly during years, by the old process, can be accomplished by the proper application of the same agent, air, before and during fermentation, in less than two months, and with the most desirable results. The waste of time, and oxidation, has been the ruin of the wine industry, and the saving of this leakage as above stated, will, by adopting the air-treatment, be the surest foundation on which the prosperous wine industry of the United States can rest. The theory seems as plain as the execution is simple, the air rising through the must produces two effects, viz: the mechanical stirring of the yeast, thereby a reviving and invigorating of this physiologically acting organism, and a chemical, directly oxidizing, action uniformly upon every part of the albumenous gluten, the only nitrogenous matter in the must. The air-treatment, by employing artificial currents of air, essentially acts upon the living principle, that air rapidly moving over every part of solid, or in passing through an organic fluid, supports, invigorates, purifies and preserves by the ozone formed in its rapid passage. Stagnant air, however, is wanting in ozone, and in contact with quiescent fluids, or juicy solids favors speedy decay. Only total exclusion from air also preserves. The American wine industry and production, to be worth several million of dollars annually, finds in the air-treatment its principal promoter, by which quickly and economically, good, cheap and well matured wines can be manufactured in large quantities, and at low rates, to reduce the importation of wines and to suppress intemperance by distilled liquors.

The practical application of the patent air-treatment for wine making may be described in its general features, as follows, to wit:

After the juice is expressed from the grape in sufficient quantities, and placed in a vat or large cask with one head removed, the must, at a temperature of sixty five to seventy five degrees Fahrenheit, is vigorously air-treated from twenty minutes to one hour. A scum forms on the surface, consisting of coagulated albumenous and resinous matter, which should be carefully skimmed off to prevent any unpleasant taste. Violent fermentation soon sets in with copious foaming. About twenty four hours after this subsides, gentle air-treatment for about five minutes at a time, twice a day, soon finishes the fermentation. According to the experience of the writer, the fermentation, by air-treatment is best conducted at a temperature of the must (for Scuppernong at from seventy five to eighty five degrees Fahrenheit) at from sixty five to seventy five degrees Fahrenheit. Must at twenty five per cent. or less of sugar, is finished and the wine dry (that is, all the sugar converted into alcohol,) in from six to ten days; an addition of cane sugar requires longer time, unless the sugar solution is previously started into fermentation. The bung may be left fully or partially open during the fermentation, to be closed when finished. In about a week after the fermentation has ceased the wine should be drawn from the lees into a clean cask, closed tight, and in about a month it is fully clarified by itself or by the usual clarifiers under air-treatment, is pure from ground taste and tendency to after fermentation, ripe and ready for shipping or bottling. A superior flavor distinguishes the wine thus made.

Imperfectly fermented or unfinished wines of *any kind, if otherwise sound*, may at any time be perfectly finished within a few weeks, under the directions devised for the purpose

by the patentee. It never yet failed in a single case. The details of this operation are also very simple. Wines finished in this manner rather lose than gain in acidity, while the usual *after-fermentation always increases the amount of acidity.*

It is not necessary, as in the old process, to construct deep, cold cellars; the glutenous albumenous parts having been removed by air-treatment, there remains no disturbing agent to cause any detrimental action on the stability of wines thus made. Simply keep the casks full and air-tight, and the wine will keep as well in a garret as in a cellar.

The cost of manufacturing wine by this process will be the saving of time, cellars, casks, interest, labor and evaporation, amounting to at least fifty per cent., and give a more uniform and superior product, and be the means of placing the wine industry of the country on a footing second to no other branch of domestic agriculture. Nobody will remain behind in the march of progress without injury to himself, now that the air method finds adoption in Europe and America, revolutionizing the industries in which it is most serviceable. The merits of the air-treatment will be fully appreciated in all localities by actual *working tests.*

To invite these tests, the patentee proposes to *assign the perpetual right* for 3,000 gallons of wine annually, free of charge, to the first person in such unsold county, that adopts this recognized process. It is time that air should be economized as the mother of all organism, the result of its action noted, and intelligently employed.

To demonstrate the practicability and economy of air-treatment in the manufacture of wine, the writer has on exhibition at this Fair, for premiums and sale, several varieties of dry and sweet wines, made from grapes that were hanging on the vines from the 15th of August to the 15th of September.

Western Pomologist.

Boils and Colds.—It is difficult to tell one from the other in a horse, but a table spoonful of chloroform in twice as much mucilage, is a good remedy for either.

WORK FOR AUGUST.

The present season is not as favorable to the cultivation of the soil as could be desired. The winter season was an unusually dry one, and many have suffered severely; but the evil did not stop there—our spring and early summer have been unusually cold and disagreeable and most unfavorable to the growth of everything in the vegetable kingdom.

While our gardeners and nurserymen complain that their young stock has been at a standstill for several months, the fruit-growers report the average of their crop much inferior in size, although quantity seems to make up for this deficiency.

We are ready to concede that the dry season and the cold weather have much to do with this deficiency in size, but we cannot abstain from blaming the owners of orchards to a considerable extent. We have often alluded to the good effects of mulching, and it is very apparent that that operation, in good season, would retain the moisture in the soil much longer than when omitted. But we are slow to accept the situation with good grace, and to deviate from the old ways by which we have plodded along for so many years with little trouble or care. If we are blessed with late rains and warm weather, the fruits will have so far advanced in size and development when the moisture in the soil has disappeared, that nothing more is required to bring them to perfection than warm weather; but if late rains do not come, and the growth of the young fruit is retarded, as has been the case this year, by the cold weather, we must expect to see a falling off in the size and quality of the fruit.

But this is not all. Our young trees are frequently overloaded with fruit, and the only remedy in the case, is the thinning out of the young fruit; this is entirely neglected. Fruit trees are permitted to break down, involving the loss both of the crop and the tree, rather than adopt the simple remedy of thinning out in good time, an operation by which we may insure both larger and better fruit. Although

the mischief is done, and it is too late for remedy this year, we hope some of our readers will be convinced of the soundness of our argument.

The fruit crop is very large in quantity, but a considerable portion being inferior, and prices being less remunerative than they were last year, we must depend to a great extent on the exportation of some of our best products, and make use of the inferior fruit for drying and preserving.

The work for the next few months will consist chiefly in the gathering and shipping of fruit, and little else can be done during that time.

The Kitchen Garden requires much labor in watering and hoeing. No more Asparagus should be cut after this time, or else the plants will be too much exhausted and weakened. Pole-beans should be pinched off at the height of five or six feet. Radishes, Lettuce, Turnips and Beets may be sown again for late crops. Celery may now be transplanted. Tomatoes should be supplied with some kind of frames to keep the bushes in shape. Two or three hoops, supported by three stakes, produce the best appearance.

And now a word or two about the raising of seeds. It is well enough to let a few plants of Lettuce and some good monthly Radishes run to seed for future use; but we earnestly recommend the purchase of the necessary seeds every year from those parties who make it their business to raise or sell reliable seeds. Rhubarb and Horseradish are apt to run to seed, and it is much better for the roots to cut down these seed-stocks than to allow them to grow and so impoverish the plant.

The Flower Garden needs as much attention as ever. The cold weather retarded the growth of annuals as well as of other flowering plants. We are accustomed to see Asters and Balsams in bloom before the middle of July, but this year they have yet shown no sign of developing their flowers; additional care and nursing is required to help them along. Of many shrubs and flowering plants cuttings may now be made with every prospect of success, if kept under glass with a very little bottom heat. Pinks can be layered, in fact this is the best time for this operation. Dahlias must have stakes as they grow up.

In the Greenhouse insects of all descriptions are apt to overrun the plants. The green flies are easily destroyed by burning tobacco refuse overnight after shutting everything up well. Other insects may be washed off with a solution of whale-oil soap.

The propagation of plants should be continued until the amount of stock required is made up. As soon as the cuttings of soft-wooded plants show signs of vegetation, which will be in about four to five weeks, (with some sooner, with others later,) it is best to transplant into the smallest size pots.

In order to obtain a good stock of flowering Cinerarias for the coming winter, seed should be now sown.

THE BLACK WALNUT—*JUGLANS NIGRA.*

We offer to our readers the subjoined extract relating to the above named very valuable timber tree, hoping that some one may be induced to propagate and plant out at least a few, even if there is not an *immediate* prospect of realizing from their timber.

"This is one of the largest and most beautiful of our forest trees. It is indigenous from Texas to Massachusetts, and from Massachusetts westward to Missouri. When growing in open grounds, it has an erect form, and large spread of limbs, with light green delicate foliage. Its limbs are not thickly placed; hence it does not form a dense shade. Its leaves are sometimes eighteen inches long, with from fifteen to twenty one leaflets, which are unequal on the midrib, and also often unequal at the base. They are sessile or nearly so, and the midrib is frequently slightly curved downward. The bark is dark grey, rough, and closely furrowed. The wood is of a dark brown, becoming blackish brown with age. It is close-grained and susceptible of a fine polish. It is much used for furniture and the inside work of houses. The large organ in

the Boston Music Hall is made of Black Walnut. Its wood is very durable; posts made of it have been known to last for more than a quarter of a century. Its growth from the seed is rapid—I have known its trees to be from fifteen to twenty five feet high, and bear fruit, at the age of seven years. Its fruit is round, and sometimes seven to eight inches in circumference. It, however, varies much in size, according to the age and luxuriance of the tree. Its nuts are somewhat compressed at the sides and furrowed. Its kernel is sweet and very oily, so much so that it is not universally esteemed. The Black Walnut ought to be extensively planted, especially in the prairie regions, because we have few trees of greater rapidity of growth or more valuable for timber. It also affords nuts which are an agreeable food to many; besides, it is decidedly ornamental.

The demand for its timber is such that the large trees are fast disappearing. The following are some of the largest which have come under my observation—the measurement at three feet from the ground, unless otherwise stated:—One in Rusk county, Texas, was fifteen feet nine inches in circumference. In Wilcox county, Alabama, was one eleven feet three inches in circumference, and another thirteen feet eight inches. These two last were from sixty to seventy feet high, and fine stately trees. A hollow section of one was exhibited some years ago in New York, the interior of which was ten feet in diameter—this was from Indiana. Near the base of Cold Mountain in North Carolina, not far from the residence of a Mr. Thompson, I measured one which was sixteen feet eight inches in circumference, and another near Waynesville, in the same State and County, sixteen feet eight inches in circumference. On Clear Creek, a branch of Cattaraugus Creek, in Cattaraugus county, New York, I measured a stump twenty feet eight inches in circumference at about three feet from the ground. This was in the summer of 1865: the tree had then been cut down sixteen years. It was in the Indian reservation; I was told by an Indian who assisted in cutting it down that it was eight feet in diameter, and had to be split into four parts to be sawed. When I measured the stump it was destitute of bark, and the sap wood had rotted away. On Silver Creek, in Cattaraugus county, New York, a black Walnut blew down in 1818, which was twenty seven feet nine inches in circumference at about three feet from the ground; it was hollow, and a section of it was used for a grocery, first in Buffalo, N. Y., then in Utica, N. Y., from which it was taken to New York City, where it was used for the same purpose, It was finally taken to England. The tree was nearly solid, and sound at the height of six or seven feet. I obtained the above information from a man who owned the tree and sold the grocery section."—*Prof. S. B. Buckley, in "Southern Horticulturist."*

HYDRANGEA—(*HORTENSIA.*)

The Hydrangeas are natives of China and Japan; they were introduced into Europe as early as 1790; they are extensively cultivated in their native country, and are favorites with florists in every part of the world.

Although a greenhouse plant in the East and in Europe, we grow them here in perfection out of doors, and in a few years many plants have acquired large dimensions. We know of Hydrangea bushes in San Francisco from four to five feet in height and from four to six feet in diameter, bearing at times a dozen or so of very large heads of flowers.

One of the admired peculiarities of the Hydrangea hortensis is the changing of color of the flowers, which at first are green, but gradually assume a pink and blue (lead) color. This habit is wanting with our plants in most cases, but could easily be attained if proper measures were employed. The pink color seems to develop well, but the blue is not often seen. In order to produce the blue, it is necessary that the soil should contain a certain amount of iron, and if this is not present it should be introduced.

The Hydrangea is of easy cultivation, requiring much moisture and partial shade.

Cuttings of the Hydrangea will grow readily under glass, making roots in less than three weeks' time.

Hydrangeas are in bloom with us during the greater part of the year; they are also well adapted for forcing under glass.

There are now a number of varieties of the Hydrangea known, of which the most promising are the *H. hortensis*, which is the oldest one under cultivation; *H. japonica foliis variegatis*, the flowers of which are not so imposing, while the foliage is most beautifully colored white and green. It is not well adapted for out of door cultivation; the *Hydr. Otaska* is a novelty yet, and promises to be a fine and interesting acquisition. We do not know any thing of it, except that it has been introduced in various places and is highly spoken of by some who ought to know.

The cuttings for propagation may be taken almost at any time, planted in sand and placed close under glass, where they will form roots in two or three weeks.

As far as the application of iron is concerned to produce blue color in the flowers, it should be understood that it is neither the oxide of iron, nor the scales of blacksmith's forges, nor rusty nails that will answer the purpose, but it is the so-called yellow ochre which, if mixed with the soil, will produce the effect. Alum water has also been recommended, but we know by experience that it has not the desired effect. Black peat generally contains a great deal of iron, and if mixed with sheep-dung is very efficacious.

Sea Moss.—No less than 1,000 tons of Irish, Swedish and Norwegian sea moss have been manufactured into Sea Moss Farine within the past year; yet the enormous production has barely kept pace with the demand of the public for this new and unequaled article of diet for invalids. The jellies, custards, puddings, creams, etc., made from this cheapest of all food staples, are not even approached in deliciousness by those prepared from any other description of gelatinous material.

Potatoes.—Wood ashes make an excellent and reliable manure for potatoes.

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Editorial Portfolio.

Now that the mining interests of this State are becoming its secondary means of support, and the Agricultural the primary one, we require a different class of immigrants; people who will bring with them a willingness for sober, patient toil, devoid of dreams of suddenly acquired wealth. It is for such, we have been striving, and yet they do not come. Why is this? In our opinion there have been, and still are, a number of causes at work that produce this result; causes which we think are within our power as a people, to remove, or at least so modify, as that they shall not work so much to our detriment.

The papers and journals of California, have not, as a general thing, been honest in their descriptions of this State; they have so bragged and blustered about the wealth of Nature in the State; have told such Munchausen-like stories, that instead of the country being represented fairly, it has only been misrepresented. They seem to have forgotten the old adage, that two much praise is worse than none at all. People have come here under the impressions and influences of these extravagant news-paper articles, and as a consequence have been sadly disappointed. Those who had money, returned, and so the State has received a bad name abroad.

The second cause, is the inability of men with small capital to get land. They are told in the East and in Europe, that within the borders of California are to be found plenty of public lands which they can have by merely occupying and cultivating. When they arrive here they find such not to be the case, and if they want free lands, they must perforce take up with a barren, rocky ridge on the outlying parts of some valley, or occupy lands well up in the Sierra Nevadas, where the distance from a market renders it almost worth-

less. The great bulk of good valley lands, are inclosed by "Spanish grants," or have been covered by school land warrants. These portions of the States are held in large tracts by residents of the cities, principally merchants, lawyers, and doctors, who refuse to sell and so prevent that influx of a farming population which we so much desire. This system (if it can be called one) has also a bad effect upon our agriculture; engendering a careless kind of cultivation which of itself is discouraging to new comers, who have been accustomed to the well tilled fields of the East and Europe. The man who has no ownership in the soil he tills, has but little thought for the requirements of that soil; and only caring for the return of his crops, draws all he can from the fields, leaving them in the end bankrupt and unable to yield further returns.

All this is wrong; what we want is small farms well cultivated, well stocked, and a permanent ownership in the land, and then we shall reach that point of success for which we all claim to work. With small farms there will be less danger of short crops, for a better mode of culture will obtain, and less reliance placed upon one or two articles alone.

Another cause to operate against us, is our long dry summer; over this of course we have no control, but we can at least inaugurate a system of irrigation which shall go a long way towards remedying this want of moisture.

It is certainly strange, that in a State claiming so much as California does, that there has been no concerted action either by the people or State government. All this requires change; the State and people must wake up and move in this matter, or we shall still continue to languish for want of all the materials that go to make up a rich and prosperous commonwealth.

The State government should have an agent (one who will work and not confine his labors to the drawing of his salary) both in the East, and in Europe, who can give all needed information about this coast, the means by which it is to be reached, and when so reached, the prospect of success to the immigrant in his new home. Less money spent in political huckstering, and for the support of unnecessary and useless commissioners at home, and more for the actual benefit of the State, would result in much good to us all.

ANTIPODAL.

We have received the Journal of the *Agricultural Society of New South Wales*, for May. It is in its third volume, and is published under the auspices of the above named Society, at Sydney. The Journal contains the first part of a list of trees and shrubs exotic to Australia, which have been introduced and are now growing in New South Wales, and Victoria. Among them we find 23 that are natives of North America, and 47 natives of Europe. Does this not show progress of the right kind in tree acclimation and cultivation?

MASSACHUSETTS HORTICULTURAL SOCIETY.

The transactions of the above Society for the year 1870 is to hand. This Society now numbers a total membership of 1,014, and includes both men and women. This is right; many of our greatest lovers of Horticulture are to be found among the ladies. We would be glad to see them well represented in the Bay District Horticultural Society of California.

"PACIFIC RURAL PRESS."

This valuable and well conducted Agricultural Journal has entered upon its second volume. We wish it all success in its labors.

STATE HORTICULTURAL SOCIETY OF OREGON.

The First Annual Fair of the Oregon State Horticultural Society was held at Portland, commencing on June 28th, and lasting three days. The Exhibition was a success in every way, except financially. We hope to hear of no such exception at the next Fair.

SALT LAKE.

Mr. I. M. Hoag, of Sacramento, has gone to Salt Lake City, in the interests of the California State Agricultural Society.

OREGON STATE FAIR.

The State Agricultural Society of Oregon, extended an invitation to Horace Greeley to deliver the Annual Address at the next State Fair. Mr. Greeley has declined, stating that it would be impossible for him to visit this coast during the present year.

BAY DISTRICT HORTICULTURAL SOCIETY.

The regular monthly meeting of this Society took place on Saturday, June 24th, for the transaction of business.

The following candidates for membership were proposed:—

Mr. E. D. Lewelling, of San Lorenzo,
" Rich. D. Reed, of Sonoma,
" W. F. Adams, of Fair Oaks,

and elected as regular members under the suspension of the rules.

A communication from Mr. F. von Mueller, of the Botanical Gardens at Melbourne, to the Society, was read, in which this gentleman kindly offers his services to forward the interests of the Society, if within his power.

A committee of two were appointed to procure a suitable diploma for the use of the Society, at the next Exhibition.

ANNUAL MEETING OF THE CALIFORNIA ACCLIMATIZING SOCIETY.

The Annual Meeting of this Society was held July 12th, at which the following named gentlemen were elected to serve as Trustees during the ensuing year: A. Badlam, E. C. Dake, C. Coates, Phil. McGovern, M. M. Estee, D. J. Mills, J. C. Green, — Larkins, C. B. Green, W. A. Newell, E. H. Neill and C. A. Stivers. At a subsequent meeting of the Trustees, the following were elected as officers of the Society: *President*, W. A. Newell; *Vice-President*, A. Badlam; *Treasurer*, D. J. Mills; *Secretary*, John Williamson.

AMERICAN POMOLOGICAL SOCIETY.

The Thirteenth Session of this Society will be held in the city of Richmond, Virginia, on the 6th, 7th and 8th days of September, 1871. An invitation has been extended to all Horticultural, Pomological and Agricultural Societies in the United States and the British Provinces, as also to all persons interested in the cultivation of fruits, etc., to send delegations. It is expected that the session will be unusually interesting, as it is to be held in conjunction with the Exhibition of the Virginia Pomological and Horticultural Society. Members and Delegates are requested to contribute specimens of the fruits of their respective districts, and to communicate in regard to them whatever may aid in promoting the objects of the Society and the science of American Pomology. Packages of fruits with the name of the contributor, may be addressed as follows: "American Pomological Society," care of H. K. Ellyson, Secretary Viginia Horticultural and Pomological Society, Richmond, Va. We hope to see California well represented.

NEW JERSEY STATE AGRICULTURAL SOCIETY.

The above Society will hold its Thirteenth Annual Fair on the 19th, 20th, 22d and 23d of September next, at Waverly Station, near Newark, N. J.

RAMIE MACHINE.

The *Rural Carolinian* says that M. Lefranc's Ramie Machine has been introduced into Mexico, and is found to prepare the Ramie fiber in a most satisfactory manner.

PREMIUMS.

The following are some of the premiums offered by societies and individuals, to be awarded at the meeting of the American Pomological Society in Richmond during the month of September next.

The Virginia Pomological and Horticultural Society offer one hundred and fifty dollars, at the disposal of the American Pomological Society.

The Virginia State Agricultural Society offer one hundred dollars for the largest and best collection of Apples, Pears, Peaches and Grapes.

Ellwanger & Barry, of Rochester, N. Y., offer fifty dollars for the largest and best collection of Apples, not less than fifty varities, three specimens each.

Marshall P. Wilder, of Boston, Mass., offers fifty dollars for the largest and best collection of Pears, not less than fifty varieties, three specimens each.

Charles Downing, of Newburg, N.Y., offers fifty dollars for the largest and best collection of American Grapes, not less than twenty varieties, three bunches each.

These are but a few of the Premiums offered, and we have published them to show the people in California how they foster and encourage the Horticultural and Pomological interests in the Eastern States.

BAD SEED.

There are many complaints this year about bad seeds, but we are inclined to believe that the dissappointment is not generally attributed to the proper cause; the seedsmen have to shoulder it all, and in most cases they are entirely blameless.

The unusually cold weather which we have experienced this year, and our dry winter, were very unfavorable to the growth of all kinds of seeds. A certain amount of warmth and moisture are requisite to produce germination, and Nature absolutely refused to supply us with these indispensables.

We know there are many mistakes made in planting seeds, such as covering them too deeply, not pulverizing the soil sufficiently, and neglecting to irrigate properly. The smaller the seed, the less they should be covered, and the finer the soil should be pulverized; and if the soil is rather dry and naturally coarse, it should be rolled after planting or beaten down slightly with the spade, so as to settle the soil closely around the seed.

Another precaution may prove very useful where valuable seeds are planted, and that is the covering of the surface with sand, which will prevent the forming of a crust, through which the young and tender germs cannot protrude themselves.

The germination of some seeds is greatly assisted by first soaking them in water, but we cannot advise the general practice of soaking, which in a great many cases results very injuriously. We admit that the seeds of some plants must be soaked in boiling water to cause germination, such as Cannas, some varieties of Acacias, etc.; but such cases should be looked upon as exceptional.

Peas are soaked in water for the purpose of swelling the seeds and hastening germination, but it is very doubtful whether any good is derived from it. Warmth and moisture and judicious planting, are the great points in sowing seeds.

WHO MAKES THE MONEY?

A year ago, or thereabouts, we sojourned for a few days in the thriving city of San José, and called upon several of our friends who were cultivating fruit on a large scale. Among the many questions we asked, for general information, was one in regard to the profit of fruit culture. Our informant, a well known gentleman and extensive fruit-grower said, good-naturedly: "All I can do with my fruit is to send it to a certain commission merchant, who disposes of it at some price, and every four or six months I go to the city for a settlement, and all that I receive amounts to just as much as he is willing to give me."

During this last month we were informed by very reliable parties on the other side of the bay, that they received for their Cherries from six to twenty five cents per pound, while the same fruit sold in our markets for three times the money. The consequences are that the fruit-grower receives little or nothing for his labor and use of capital, while the consumer is compelled to pay enormous prices: the commission merchant and the jobber absorb it all, or nearly so.

We think it very desirable that a change should be effected before long in this matter; the cultivator should have a fair price for his fruit, etc.; the commission merchant should receive from five to ten per cent., and the consumer would then be enabled to purchase what he wanted at a reasonable price: fruit would then be cheap, much more would be used, and the cultivation of orchards would be a more profitable business.

How can this reform be accomplished, and who will inaugurate a movement to deliver us from this deep-rooted evil?

THE HORTICULTURAL EXHIBITION.

The Bay District Horticultural Society is making extensive preparations for its Exhibition, to be held in this city during the next month, in conjunction with the Industrial Fair.

This young Society, although only eight months in existence, already numbers 70 members, of which the greater number are practical Horticulturists. Their efforts to foster taste and diffuse knowledge are most laudable, and we hope that the public will appreciate their untiring labors.

The space set apart for this department is some 350 feet long by about 50 feet in width. Opposite the entrance a grass-plot has been located, which will be embellished by groups of ornamental trees, beds of flowering-plants and statues. Walks of ten feet in width laid with shells will separate the outside borders from the central portion, which will contain the larger shrubs and trees, while the borders will be filled up with the exhibits of fruits and pot-plants.

One end of the building will be occupied by a fine garden frame, artistically constructed of wire, while the other end will be ornamented with a miniature garden.

In the adjoining spaces two beautiful marble fountains will be erected, which will be appropriately ornamented with rocks and plants; between the fountain and the wire-frame at the one end, and the fountain and miniature garden at the other, tables will be arranged for the display of cut-flowers and bouquets.

Over 500 square feet of tables have been put up for fruits and vegetables.

The entire outline of the space to be occupied will be ornamented with evergreens and over one hundred gas-lights will illuminate the display during the evenings.

It is hoped that the preparations will meet all reasonable expectations. All that is now requisite to make this Exhibition a complete success, is some little sacrifice on the part of our florists, fruit-growers and horticulturists in general, in displaying the fruits of their labors before the public, and in seeking the best possible effect by appropriate and judicious arrangement, and thus winning the admiration of all who may chance to witness the display; to foster a taste the want of which is so sadly felt in this community, and to profit by comparing the result of their toil with that of their neighbors and colleagues.

Very many of our horticultural friends recognize the importance of exhibitions of this character, and they will do all in their power to make it a success, but we much regret to hear some say, "it won't pay us."

All over the civilized world public exhibitions are held and encouraged, and their good effects can easily be perceived by any intelligent mind; almost every branch of industry is stimulated by them, while the various exhibitors are engaged in friendly rivalry with one another. But the "won't pay" whine is a cowardly utterance of men who have no go-ahead spirit in them; men who care little for general prosperity and progress, except when

their own individual interests can be advanced. However, we hope that this contemptible selfishness will sooner or later give place to better judgment, and that before many years, every one will give a helping hand and pride himself in excelling his neighbor in the excellence of his display, and the amount of aid rendered. This is the true road to success.

We therefore appeal to all good men to voluntarily come forward and contribute the best they have, no matter how little, to make this Exhibition one of which every friend of Horticulture may feel proud.

TEA CULTURE.

Tea cultivation is increasing in the Southern States, and it is believed that tea enough will soon be grown there for home consumption. How is it about the experiment in the cultivation of the Tea-plant in California? Is the Calistoga trial to be final? We hope not. Knowing the nature of the plant, and the climate of California as we do, we feel certain that its cultivation will succeed in this State.

VALUE OF IRRIGATION.

Land under irrigation in Spain will sell for $500 per acre, while that alongside of it but which is not irrigated, will not bring more than $50. A company organized in Madrid with a capital of $1,500,000 has reclaimed 300,000 acres of land, and is paying dividends equal to 18 per cent. on the investment.

If irrigation does so much for land in Spain, is it not time that our capitalists invested their money in the same direction?

All over the Eastern States and throughout the European continent, a general system of irrigation is being introduced, although more or less rain falls there during the summer. How much more necessary is such a system to California, where all vegetation is arrested for want of moisture during the summer and autumn!

We most sincerely hope that the various irrigation enterprises which have been proposed (some of which are partly commenced) in various parts of California, may be prosecuted energetically and to the satisfaction of all concerned. Capital must come to the aid of the farmer and manufacturer, if we desire that prosperity and happiness shall reign once more over our golden State.

THE ENEMIES OF THE ROSE.

Although Roses are very easy of culture in our gardens and are the most popular of flowering plants, yet they have their enemies, and very often Rose-bushes suffer and even perish, without the true cause of the mischief being ascertained.

One of the worst enemies is the *Aphis rosæ*, which sometimes covers all the young branches and exhausts the sap from the tender leaves and shoots. The female aphis produces her young throughout the entire year, and is particularly active on plants which are kept in warm rooms. These are most effectually destroyed, by brushing them with a soft brush into a basin filled with Tobacco juice. They may also be killed by fumigating with Tobacco smoke or the vapor of burning Solanum and Tomato leaves; but it is advisable to sprinkle the plants well with water, so that the atmosphere may not become too dry from the effect of the fumigation.

Another very troublesome insect is the red spider, (*Acarus telarius,*) which is generally found on the under side of the leaf. It sucks the sap from the leaves, which drop off and the plant appears in a sickly condition. This pest may be destroyed by sprinkling the plants and particularly the under sides of the leaves with soot dissolved in water; this remdy is at the same time a good fertilizer.

Watering Milk.—A lady correspondent of the *Maine Farmer* says that "she gets much more cream in summer by taking out what milk she wants for family use and then pouring into it cold water; and in cold weather by using hot water. This is much easier than scalding the milk, as generally recommended."

EMPLOYERS OF GARDENERS.

Our next Horticultural Exhibition should be visited by every professional gardener in California, and we would suggest to those gentlemen who have gardeners in their employ, to encourage their men to attend our Exhibition. Much good may result from such action, as many matters of interest will doubtless be thus brought to light, and much valuable information may be obtained from the interchange of experience in different localities. This is one of the most useful results of Horticultural Societies and Exhibitions. We should take advantage of these opportunities, and not only study to please the eyes of our visitors but also to enlighten each other with the best of our knowledge and experience. An exhibition of this kind should not only be attractive, but likewise useful and instructive.

COMMUNICATIONS AND BRIEF NOTES.

Under the above heading the *Gardener's Monthly* says: "We are much indebted to our Horticultural friends who favor us with their thoughts, opinions and suggestions, from which we can make brief paragraphs, as well as to those who send us from time to time excellent articles for our 'communication' page. Every gardener or lover of plants and fruits, can, if they only think so, send us notes of much value."

[We are sorry to say, that our Californian Horticultural friends are much behind in this respect, and we can attribute their indifference more to their extreme *modesty*, than to their unwillingness. But we wish our friends to understand, that we could do much more good, if they would be kind enough to give us any information which will lead to practical results. A magazine of this kind should express the opinions and experiences of our most practical men, and not be compelled to rely solely upon the experience of a few.—Ed.]

OUR FRUIT AND VEGETABLE MARKETS.

The supply of Fruits and Vegetables is now very abundant, (15th July.) Many additional varieties are making their appearance in the market.

Cherries are still plentiful.

Strawberries are scarce.

Raspberries abundant and fine.

Blackberries also are crowding into market.

Currants continue plentiful.

Gooseberries hold their place, and there is still a show of Rhubarb.

Apricots are abundant, and

Peaches of several varieties are filling up the market.

Apples of many kinds are plentiful.

Pears also in variety.

Figs are large and luscious and in good supply,

While a few Plums, early Grapes and Musk Melons add to the variety and please the eye.

There are also some Cherry-plums, Cherry-apples and Almonds.

There is the usual supply of Oranges and Limes, Lemons, Bananas, Pine-apples and other Tropical productions, with some Nuts.

The Vegetable market has an ample supply of Cabbages, Cauliflowers, Turnips, Carrots, Potatoes, Brocoli, Leeks, Onions and Lettuce.

Asparagus is becoming scarce, as are also Peas; but String and Lima Beans are in sufficient supply, and Tomatoes are becoming plentiful.

Celery, Beets, Summer Squash, Sweet Corn, Artichokes, Gumbo, Cucumbers, Capsicum, Horseradish and Peppers, are sufficient to meet the present demand.

A pretty ornament may be made by suspending an acorn by a piece of thread tied around it, within an inch of the surface of some water contained in a vase, tumbler or saucer, and allowing it to remain undisturbed for several weeks. It will then burst open, and small roots will seek the water; a straight and tapering stem, with beautiful and glossy green leaves, will shoot upward and present a pleasing appearance.

Correspondence.

Napa, July 14th, 1871.

Editor Horticulturist: Acting on the advice contained in your valuable Journal, I have tried Whale-oil Soap for the destruction of Cabbage-lice, and believe it to be the great desideratum. I have sprinkled the Cabbages but twice with the solution, and while it has not entirely eradicated the pests, yet it has stopped their depredations and lessened their numbers to such an extent as to give me hope that a couple more applications will entirely remove them.

I believe that sousing the plants in the solution, previously to planting them out, gives them an excellent protection not only against the Cabbage-louse, but all other destructive insects. My plants so prepared were also exempted from the attacks of squirrels, hares, etc., which had committed extensive depredations among those not so treated. H. F.

Editorial Gleanings.

Bermuda Grass.—Twenty years ago no country in the world was so prolific in natural growth of Grass as California. The finest grazing country that ever was known, perhaps, was the valley of the Sacramento and adjacent tributaries. Cattle could then live and keep fat the year round. Wild oats, clover, red top, alfalfa, and a variety of other succulent grasses, were indigenous to the soil, and grew luxuriantly. Now the whole face of the country is changed; the land has, in many places, been fenced and put in cultivation, and where the thousands of cattle roamed in undisturbed tranquillity among blooming flowers, and lazily fattened on the most nutritious grasses, the land has been plowed and is covered with orchards, vineyards and waving fields of grain. The cattle, for want of proper range, have had to be driven to the mountains or inclosed in pastures kept for the purpose.

Since it has become necessary to provide for the sustenance of stock, some of our farmers are beginning to look around and try to find out what kind of pasture is the most profitable, and what kind of grass they shall sow. What is called Bermuda Grass is said to be the best adapted to this climate, and the most nutritious at the same time. It is rather rare here as yet, but when its merits are fully known, will, no doubt, be extensively sown by our farmers for pasture use. We were shown a specimen of this grass a few days ago. It presents a remarkable appearance. It is about six inches in length and bears a head with seed something like timothy. It can be seen growing in the yard of Mr. Wise, on H street, near the park. We call attention, especially, to this grass, as it may be of interest to our farmers to know what is considered the best, and where a specimen can be seen.—*Sacramento Reporter.*

Total Depravity in a Garden.—I believe that I have found, if not original sin, at least total vegetable depravity in my garden; and it was there before I went into it. It is the bunch, or joint, or snake-grass, whatever it is called. This grass has a slender, beautiful stalk, and when you cut it down, or pull up a long root of it, you fancy it is got rid of; but in a day or two it will come up in the same spot in half a dozen vigorous blades. Cutting down and pulling up are what it thrives on. Extermination rather helps it. If you follow a slender white root, it will be found to run under the ground until it meets another white root; and you will soon unearth a net-work of them, with a net somewhere sending out dozens of sharp-pointed, healthy shoots, every joint to be an independent life and plant. The only way to deal with it is to take one part hoe and two parts fingers, and carefully dig it out, not leaving a joint anywhere. It will take a little time, say all summer, to dig out a small patch; but if you once dig it out, and keep it out, you will have no further trouble.

An Orange Tree at Montecito.—On the farm of Agustus Dinsmore in the Montecito, some five miles east of town, says the Santa Barbara *Press*, our attention was drawn to an Orange tree seven years old from the seed, of the Tahiti variety, which must have on it some 1,200 young oranges in various stages of growth. One, we noticed, was nearly ripe, while clusters of flowers are to be seen on the overhanging boughs. The fruit on this young tree is of a very delicate kind, being unusually sweet and luscious. Last year the tree bore nearly seventy oranges; this year it will have more than a thousand, worth at least five cents apiece. Hence, the crop of this one seven years old seedling orange tree will be worth over fifty dollars. Next year it will produce at least one hundred dollars worth.—*Alta California.*

Sweeping Carpets—Persons who are accustomed to use tea-leaves for sweeping carpets, and find that they leave stains, will do well to employ fresh cut grass instead. It is better than tea-leaves for preventing dust, and gives the carpet a very bright, fresh appearance.

Insect Traps.—Now that Horticulture has come to be largely a fight with insect depredators, every method of getting the best of the foe is eagerly scanned. Some horticulturists are beginning to find out that the easiest way to fight worms and insects is to trap the parent millers, moths or bugs, as is easily done by suspending in trees and in gardens wide-mouthed bottles or jars, half-filled with thin molasses or very sweet water. A writer in the New York *Observer* says:

"I have tested the efficacy of this insect trap, and have found it all that can be desired for trapping the butterflies, moths, millers and beetles of every species of insects that infest fruit trees and vines, vegetables and flowers. The worms on grape-vines, the worms on tobacco, on tomatoes, and on Irish potatoes, all spring from eggs deposited by butterflies which can be readily trapped in this way. We trapped last season scores of many species of depredators, in our city lot in Brooklyn. Several gentlemen who reside in the valley of the Hudson river have trapped more than a bushel each, consisting of almost an endless variety of moth millers, beetles, bugs and flies. Every fruit tree, every evergreen and deciduous tree, every berry bush and fruit-bearing vine, and every vegetable cultivated in the garden is attacked by a species of noxious insect which flourish only where their appropriate species of trees or fruit is cultivated; and strange to say, every one of those foes spring from parent insects in the form of butterflies, moth millers, beetles, or bugs, every species of which will hazard life for the sake of getting a taste of the contents of the bottle. Like our eligible young ladies who are warned of the troubles incident to connubial life, they want to taste and try for themselves. Foreign papers state that it was estimated that more than thirty millions of insects were trapped in bottles containing very sweet water, in a certain section of country in France last year. As every butterfly or moth produces a very numerous progeny, it will be seen at once that it is in this form the insect ravagers can be most succesfully fought.

Origin of Plants.—Peas are of Egyptian origin; Celery originated in Germany; the Chestnut came from Italy; the Onion originated in Egypt; the Nettle comes from Europe; Tobacco is a native of Virginia; the Citron is a native of Greece; the Pine is a native of America; Oats originated in North Africa; Rye originally came from Siberia; the Poppy first came from the East; the Mulberry originated in Persia; Parsley was first known in Sardinia; the Pear and Apple are from Europe; Spinach was first cultivated in Arabia; the Sun-flower was brought from Peru; the Walnut and Peach came from Persia; the Horse-chestnut is a native of Thibet; the Cucumber came from the East Indies, and the Radish originated in China and Japan.

A Woman's Opinion of California Husbandmen.—Mrs. M. A. Sheldon, San Francisco, Cal., writes the *Farmer's Club*, that in her opinion the husbandmen in California farm twice the land they ought to. They plow from three to five inches, and, as they have in wet years reaped a bountiful harvest from such slovenly cultivation, they have grown careless and trust a great deal to the smiles of Providence, when if they would put in the plow beam deep, and follow up with a subsoil plow, Providence would "grin right out" in a dry year.

Redwood Sawdust in Running Streams.—Much complaint is made, through the redwood country, of the practice of casting sawdust into running streams. If carried to any considerable extent, it becomes a most intolerable nuisance, rendering the water impure, and entirely unfit for domestic use, or for the use of stock. Wherever it lodges and remains for some time in any considerable body, especially if exposed to the hot sun, as it must be, more or less, during the season of low water, it generates the most disgusting mephitic gases, equal to or worse than decaying animal matter.

We have had some experience in the way of placing hot water, for only a few days, in a redwood tank, in a manufacturing establishment in this city. It produced a stench, which, if it had been continued, would have driven all the workmen out of the building. Of course no fish can live in a stream where such sawdust is thrown. Neither any person, nor any manufacturing establishment has a right to poison any running stream. If the nuisance cannot otherwise be abated, Legislative enactment should make it imperative and binding on mill men to cease a continuance of this nuisance.—*Rural Press.*

The *Technologist* says:—"One cord of wood, cut and split fine, and corded up beneath a shelter, while it is yet green, will furnish more heat after it becomes seasoned than two cords of the same kind of wood which has been continually exposed to the alternate influences of storms and sunshine."

Breeding Gold Fish.—A correspondent of the *Scottish Farmer* says: A friend of mine some years ago constructed a tank about sixteen feet long, and between four and five feet broad, by three feet deep, which he stocked with fish, but they did not breed. I suggested to him that gold fish were very fond of eating their own young, and that if he wanted to breed fish he must have the means of separating the old from the young. I also advised him to stretch across the tank a partition of wire-work, with a mesh sufficiently small to prevent the large fish from pushing through, at the same time giving the young fry an opportunity of getting into a secure place. This answered the purpose perfectly, and they bred in numbers.

Gold fish should be kept in water of an even temperature—neither too warm nor too cold. A very small quantity of the white of an egg, broken up into minute particles, is sufficient daily food for some half-dozen fish. To this a very small quantity of pounded vermicelli may be added.—*Rural Press.*

Garden Walks, Etc.—To make good dry walks that may be used with pleasure and comfort at all times, take three parts screened gravel, one part flour of lime (previously riddled), add as much coal tar as will make it of the consistence of stiff mortar; if the tar is heated it will be easier to work. For ordinary garden walks this should be laid on from two to two and a half inches thick, it should be slightly thicker in the centre than at the sides, which should be one inch below the edge; the centre of the walk to be the same height as the grass edge, but they must vary a little, according to the width of the walk. Smooth and beat the surface with the back of the spade as the work proceeds. If the black color be an objection, take three parts of sand and one part of lime, mix well

together, and sift a little over the surface while still moist, and roll well. We have walks which were made as above thirteen years ago, and they are as good as ever; but care must be taken in laying them to have a firm basis. These walks have a great many advantages over ordinary gravel walks: they are always dry, grow no weeds, and are much more easily swept; wheeling of manure and soil can be done at any time, and very much more quickly and easily; indeed they are a great saving of labor in many ways, and when once perfectly dry, frost does not affect them. Where gravel is scarce or expensive, very good walks may be made with sand, lime, and tar, in the same proportions as above, but this takes much longer to set before it is fit to walk upon, and is more difficult to spread, but this is got over by using a warm spade. To make a good carriage road, coarser material must be used, and laid in two layers,—first three inches of broken stones; second, screened gravel two inches, mixed as directed for garden walks.—*John Taylor, Rose Hill Lodge, Botcherby, Carlisle.*

Thuja Lobbii.—As a hedge plant this fine, fast-growing Conifer makes the best of all evergreen hedges. The American Arbor-vitæ is universally used by nurserymen to form hedges to shelter their finest half-hardy plants and shrubs, but Thuja Lobbii (*T. gigantea*) grows quicker, is more compact in habit, and keeps its fine green color all winter. A few years ago I raised a quantity of T. Lobbii seedlings from imported seeds, and having a very exposed quarter in the orchard that wanted shelter, I had a hedge of them planted out. This hedge is now about ten or eleven feet in height, has never been clipped but is quite compact. For growing into specimens, I likewise believe T. Lobbii will yet be found to be best of all the Thujas—from its fine habit and its beautiful green foliage. Having an immense quantity of Cupressus Lawsoniana raised from seeds grown here, I have likewise tried these for making evergreen hedges in the kitchen garden, and they seem to bear clipping well; and being of such rapid growth, they will form a good sheltering hedge in three or four years. This fine tree bears seeds at so young a stage that seedlings may now be raised as plentiful as Larches, it is, therefore, worthy of a trial for forming evergreen hedges in nurseries and gardens where shelter is wanted.

William Tillery.

French Method of Raising Potatoes.—As soon as a cluster of flowers is visible, the stem is topped down to the cluster, so that the flowers terminate the stem. The effect is that the sap is immediately impelled into the two buds next below the cluster, which soon push strongly and produce another cluster of flowers each. When these are visible, the branch to which they belong is also topped down to their level, and this is done successively. By this means the plants become stout dwarf bushes, not above eighteen inches high. In order to prevent their falling over, sticks or strings are stretched horizontally along the rows, so as to keep the plants erect. In addition to this, all the laterals that have no flowers, and after the fifth topping, all laterals whatsoever are nipped off. In this way the ripe sap is directed into the tuber, which acquires a beauty, size and excellence unattained by other means.

Gardening as a Recreation.—I would recommend every man, in the autumn of his life, to take to gardening, if he has not already experienced its pleasures. Of all occupations in the world it is the one which best combines repose and activity. It is rest-in-work and work-in-rest. It is not idleness; it is not stagnation—and yet it is perfect quietude. Like all things mortal, it has its failures and its disappointments, and there are some things hard to understand. But it is never without its rewards. And, perhaps, if there were nothing but successful cultivation, the aggregate enjoyment would be less. It is better for the occasional shadows that come over the scene. The discipline, too, is most salutary. It tries one's patience, and it tries

one's faith. The perpetual warfare that seems ever to be going on between the animal and the vegetable world is something strange and perplexing. It is hard to understand why the beautiful tender blossoms and the delicate fresh leaflets of my Rose-trees should be covered with green flies, and destroyed as soon as they are born. It is a mystery which I cannot solve—but I know that there is a meaning in it, and that it is all decreed for good, only that I am too ignorant to fathom it. And even in the worst of seasons there is far more to reward and encourage than to dishearten and to disappoint. There is no day of the year without something to afford tranquil pleasure to the cultivator of flowers, something on which the mind may rest (using the word in its double sense) with profit and delight. If there is no new surprise, no fresh discovery for you, there is always something to be done.

The Cornhill Magazine.

Intoxication by Fungi.—In Keenan's interesting "Tent Life in Siberia" there occurs the following passage:

After due conclusion of the ceremony (a Korak marriage) we removed to an adjacent tent, and were surprised, as we came out into the open air, to see three or four Koraks shouting and reeling about in an advanced stage of intoxication—celebrating, I suppose, the happy event which had just transpired. I knew that there was not a drop of alcoholic liquor in all Northern Kamschatka, nor, so far as I know, anything from which it could be made; and it was a mystery to me how they had succeeded in becoming so suddenly, thoroughly, hopelessly, and undeniably drunk.

Even Ross Browne's beloved Washoe, with its "howling wilderness" saloons, could not have turned out more creditable specimens of humanity intoxicated than those before us. The exciting agent, whatever it might be, was certainly as quick in its operation and as effective in its results as any 'tangle-foot' or 'bottled lightning' known to modern civilization. Upon inquiry, we learned, to our astonishment, that they had been eating a species of the plant vulgarly known as toadstool. There is a peculiar fungus of this class in Siberia known to the natives as 'muk-a-moor,' and as it possesses active intoxicating properties, it is used as a stimulant by nearly all the Siberian tribes. Taken in large quantities, it is a violent narcotic poison; but in small doses it produces all the effects of alcoholic liquor. Its habitual use, however, completely shatters the nervous system, and its sale by Russian traders to the natives has consequently been made a criminal offence by Russian law. In spite of all prohibitions, the trade is still carried on, and there were twenty dollars' worth of furs bought with a single fungus.

Care of Gold Fish.—If Delia Merrill would save her remaining gold fish she must feed it without delay. They probably find enough in their native streams to support life, but not confined in a small globe. I once lost three, the most beautiful fish that I ever saw, by this stupid idea, that they could live on the animal life they found in the water. Mix together a little flour and water to the consistency of dough, roll into little pills the size of a small pea, and feed three or four of these once a day; occasionally give an angle worm cut in small pieces. Then change the water in your globe daily, and your fish will be all right.

I also prepare another kind of food—of white of egg and flour, which is nice for a change. This is especially for gold fish; know nothing about the treatment of common fish. I have shells in my globe, and one little cup-shaped shell receives the food; and it is just *jolly* to see them sail around to get it.—L. *Rural New Yorker.*

To Remove Stains.—Coffee and fruit stains on linen and white cloths will be set rather than removed by soap if put into the suds with the stains on them. They should be first put into boiling water and kept there until the water becomes cold, and then put into the suds.

The Bedding-out System.—The practice of planting-out various kinds of tender or half-hardy plants about the middle of the month of May into beds, in the open air, with the view of producing a grand display of floral beauty in the parterre during the summer and autumnal months, is usually designated the "bedding-out system;" and although this may have been practised to some extent very many years ago, still its universal adoption as a system may be regarded as comparatively modern, probably dating back less than half a century.

This system has been necessarily progressive in its development, in accordance with acquired knowledge as to the capabilities of the various materials brought into use in producing desired results, and has also from time to time been aided and influenced by the introduction of novelties suited to the purpose in view, such novelties being due to the indefatigable exertions of collectors on foreign stations, as well as to the skill and labor of the hybridiser and cross-breeder at home.

Altogether the bedding-out system has attained a degree of popularity which is likely to be lasting; although it is by no means to be supposed that it has attained to the utmost degree of perfection of which it is capable, or that it is by any means at a standstill. Indeed the reverse of this is proved to be the case, inasmuch as in very many garden establishments each succeeding season is evidently an advance upon its predecessors in regard to the selection of material, the arrangement of the same, and the satisfactory effect produced. The system may without doubt be regarded, even in its present condition, as a great advance upon that which it has in a great measure superseded, and which, although still applicable and well suited to some circumstances and situations, in too many instances consisted of a series of unmeaning clumps or beds, without any apparent order or arrangement, and which added little to the beauty or the interest, of the lawn which usually surrounds a country mansion or residence.

These clumps or beds were frequently of considerable dimensions, and were usually planted with hardy herbaceous plants, annuals, bulbs, etc., which though by no means deficient in interest to the lovers of flowers, were still without any pretensions to that concentrated display of floral beauty which is annually presented by the present popular system. The latter might indeed be considered to be so great an improvement upon its predecessor that it could hardly have a single opponent or detractor. But this is by no means the case, for there are at least a few writers upon the subject whose almost furious attempts to bring this style of flower gardening into contempt, suggests the probability of there being something in scarlet Pelargoniums, yellow Calceolarias, etc., which exercises some occult pathological influence upon certain temperaments, similar to that produced by a red flag upon the temper of a certain quadruped, otherwise usually quiet and docile in his deportment.

It is, however, to be regretted that the advocates of one style or system of decoration should think it necessary to denounce another, when there may be room enough for both, and each may be equally applicable under certain circumstances. And I believe that there are few, if any, advocates of the prevailing style of plant grouping, who would for a moment wish to see the entire class of hardy herbaceous plants, or the still more interesting class of hardy alpine perennials banished from the flower garden; or who would be unwilling to admit that the herbaceous border, etc., possessed attractions of the most interesting character.

There cannot be a doubt that flowers are a source of great pleasure and gratification to nearly all classes and conditions of mankind, be they learned or unlearned, rich or poor. Few, indeed, can be said to be altogether indifferent to their attractions. It is also at the same time easy to conceive how that, to the eye of the botanist, the humblest flower that blooms wild on the mountain side or adorns the headland glade, may possess equal or even greater attractions than its more beauteous sister of the parterre. But as all

lovers of flowers cannot be botanists, it follows that plants are found to be generally appreciated and admired in accordance with the beauty possessed by their flowers and foliage, the grace of their habit, and the sweetness of their perfume; and to stigmatize any class of plants as glaring and vulgar, etc., because their habit happens to be floriferous and their hues bright, hardly seems reasonable and just.—*Gardener's Chronicle.*

The following useful extracts are from the Agricultural Report of May and June:

Effect of Trees on Climate, (Malta.)—Much has been said in the work of Mr. Geo. P. Marsh, entitled "Man and Nature," and by many other writers, of the influences exerted by man upon the physical condition of the earth and the atmosphere, and deserved stress has been laid upon the important part played by trees in all phenomena connected with the amelioration of climates and the restoration or increase of rain-fall, and the diminution in the number and the intense severity of inundations, etc. Mr. Buchan, a well-known meteorologist of Edinburgh, has lately made a report to the Scientific Society of that city in regard to certain measures about being introduced by the Governor of Malta for replanting the island with trees, in which he remarks that the characteristic features of the climate of that island are the cold northerly winds of the winter, and the excessive heat of the summer, with a great scarcity of water throughout the whole year. The entire absence of trees on the island was thought to intensify and increase these extremes, and it was believed that by securing an abundant covering of forests much could be done for the amelioration of the climate. Mr. Buchan, in reference to the general theory of such amelioration, states that while the highest temperature of the air occurs in summer between 2 and 3 o'clock P. M., the change in the trees is very slow, the leaves not attaining their maximum temperature until 9 o'clock P. M. Thus, while the atmospheric changes are rapid, the temperature varies slowly in the trees, and therefore they serve, like the ocean, as equalizers of the temperature, moderating the heat of the day and maintaining a higher temperature during the night.

In continuation of the same subject, Mr. Buchan remarks that, as air is heated by contact with the soil, and as trees shelter the soil from the solar radiation, they must diminish the force of the sun's rays, especially in the lower strata of the atmosphere. The exhalation of moisture by trees produces cold in the air by extracting the latent heat from it. This lowering of the temperature gives to the air a greater degree of humidity. Again, the leaves of trees exercise an important influence in cooling the atmosphere, as the tree itself, by its radiation of heat, becomes sensibly lower in temperature, and thus cools the air as it plays among the leaves.

Sulphuric Acid for Destroying Weeds in Lawns.—A writer in an English journal suggests the use of ordinary sulphuric acid or oil of vitriol, as an excellent agent for the destruction of weeds on lawns. The difficulty of eradicating such unsightly elements of the lawn is well understood, since to do so satisfactorily requires the removal of a large amount of dirt, producing a corresponding injury to the general appearance. By taking the acid in question, and allowing a few drops to fall into the crown of any obnoxious weeds, it will turn them brown in an instant, and ultimately cause the death of the plant. Great care must of course be taken to prevent any of the acid from falling upon the skin, or any article of clothing; but with ordinary care a large amount of surface can be treated in a short time with most excellent results.

Russian Method of Preserving Fruit.—A method of preserving fruit, quite frequently adopted in Russia, consists in slacking fresh lime by sprinkling it with water and adding a little creosote. The fruit is to be packed in wooden boxes, with a layer of the prepared chalk powder of an inch in depth at the bottom. This layer is to be first covered with a sheet

of paper, and upon it the fruit is to be laid so as not to touch each other. On the first layer of fruit another sheet of paper is placed, with the lime powder sprinkled over it, and a sheet of paper over this; upon this another layer of fruit is spread, as before, and the process continued until the box is full. The corners may then be filled with charcoal. If a tight-fitting cover is put on the box, the fruit, it is said, will maintain its freshness for at least a year.

Preparations of Wooden Labels for Plants.—Wooden labels for plants, to be inserted in the ground, may, it is said, be preserved for an indefinite time by first dipping them in a solution of one part copper vitriol and twenty-four parts water, and subsequently immersing in lime water, or a solution of gypsum.

New Zealand Flax.—Among the substances used in the arts as fibers, the New Zealand flax at one time promised to be of great prominence; but owing to its high price, and the difficulty and expense of bleaching it, it has not been employed in so many applications as its strength and other qualities warrant. The principal difficulty in making a profitable use of it has been from the tenacity of the gum which envelops the fibers. This, according to a late writer, consists of three distinct substances: first, an actual gum, found only on the upper leaves and near their bases, and readily dissolved by boiling water, or removable by mechanical means; second, a bitter principle, which it is suggested may be used as a dye or stain for wood, and a mucilage, both easily extracted; and, third, a kind of cement, only to be removed by boiling water and alkali, and upon the retention of which the strength of the fibers depends.

The Gigantic Water-Lily.—Of this wonderful and interesting plant, the *Rural Carolinian* publishes the following description:

"The leaf on its upper surface is of a bright green, in form almost orbicular, except that on one side it is slightly bent in; its diameter measures from five to six feet. Around the whole margin extends a rim from three to five inches in height, which on the inside is of a light green; on the outside, like the leaf's lower surface, it is of the brightest crimson. The calyx is four leaved, each sepal upwards of seven inches in length and three inches in breadth; at the base these are white, inside they are of a reddish brown color, and prickly outside. The diameter of the calyx is from twelve to thirteen inches; on it rests the magnificent canolla, which when fully developed, completely covers the calyx with its hundred petals. When it first opens it is white, with pink in the middle, which spreads over the whole flower as it advances in age, and it is generally found the next day altogether of a pink color; and as if to enhance its beauty, it is sweet scented.

The Victoria Regia was discovered in the River Berbice, in British Guiana, and named in honor of Queen Victoria. It was successfully cultivated and flowered, first in England, and since then in several instances in this country."

[In 1850 we had the pleasure of seeing one of these plants in one of the Royal Gardens of Wurtemberg; a special house had been built to accommodate this monstrous plant; it occupied a basin filled with water, about thirty feet square, and the leaves of the plant were spread upon the surface of the water. We were told at the time that the leaves were strong enough to uphold a young child, which we believe was correct.—Ed.]

The Two-Leaved Solomon's Seal.—The *American Agriculturist* describes this little flower as follows: "In May, in most woods, there may be found an abundance of a little plant which somewhat resembles the Lily of the Valley—the Two-leaved Solomon's Seal. It is only from two to five inches high and each stem bears two and often three heart-shaped leaves. The minute white flowers are in erect spikes, an inch or more long. When the plant grows in dense tufts or clumps, it makes an exceedingly neat and pretty appearance. The plant is easily cultivated and

though it does better in a partially shaded place, it will flourish when fully exposed. Care must be taken to keep the weeds from encroaching upon it. In its season we frequently see the flowers of this *Smilacina* used in bouquets by the city florists, its delicate spikes projecting above the coarser flowers, producing a graceful effect."

[This plant is to be found in nearly all parts of California, and is indeed a little beauty, well worthy of cultivation by our florists, both professional and amateur. Its botanical name is *Majanthemum bifolium.*—Ed.]

Raisins.—In some wine-growing districts the produce of grapes is not fit for wine-making, and the fruits are then dried and form the raisins of our shops. All raisins, then, whether they be Muscatels, Valencias, or whatever variety, are in reality true grapes, differing from the wine-grapes only in size, or the absence of the juicy principle which, to a considerable extent, develops into flesh or pulp. The best raisins are grown on the Spanish shores of the Mediterranean, the climate about Valencia and Malaga apparently suiting them better than anywhere else. But raisins are also extensively cultivated in the lower parts of Greece, as well as in other parts of the Continent. The preparation, or drying, upon which the value of the fruit to a great extent depends, is in this case conducted differently from that of the more common kinds. Usually the grapes are gathered in bunches when fully ripe, and hung up or spread out to dry. These are afterwards placed in vessels full of holes, and dipped in a lye made of wood ashes and vanilla, with the addition of a little salt and oil. This brings the saccharine juice to the surface, and causes the dark brown color as well as the crystallization of the sugar which is so characteristic of the cheaper fruit. The best varieties are simply dried in the sun before removal from the tree. The fruit is carefully watched, and when at the proper stage of ripeness, the stalks of the branches are partly cut through and allowed to hang till dry.

Pine Woods in France—*Departments of the Gironde and Dordogne.*—There are large tracts of country in the Landes of these departments fit only for the growth of the Pine tree. Along the sea coast the Pine woods now afford a most efficacious protection against the encroachments of the sea. Some fifty years ago great apprehension existed of the destruction of the Medoc country by inundation, as the banks of sand which are the only barriers against the ocean were observed to be yielding. The idea then occurred of planting the Pine tree (*P. maritima*), in order to bind the sand, and the result has been most satisfactory. This is a remarkable instance of what may be effected by natural means when artificial means fail.

Pine wood property in the interior became very much more valuable upon the breaking out of the American civil war, owing to the failure of the supply of resinous substances from that country, and considerable fortunes were realized in consequence. An acre of Pine wood produces from 55 to 77 gallons of resinous matter, and it sold at that time for 3*s* and 4*s* per gallon. The Pine has since fallen to one half that amount, but the profit per acre is still calculated at from £2 8*s*. to £2 16*s*. An acre of good Pine plantation, fifty years old, is now worth £30, which is treble what it was worth thirty years ago.

The preparation of resin has become an important industry in the Landes districts, and employs a considerable number of hands. The liquid matter is obtained by tapping the trees, to the stems of which are fixed small earthen pots, into which it runs. A tree may be tapped when twenty years old, and will support this process for thirty years. J. R. J.

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THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

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FILICES, (FERNS.)

Ferns are found in almost every part of the globe, and although they produce no flowers, their foliage is most graceful and admirable. Of late much interest has been taken in Europe and the East in the cultivation of this admirable class of plants, and large glass houses are filled with Ferns from every part of the world.

For a long time and until within a few years past, it was generally believed that Ferns were rather delicate plants, and for decoration of parlors, etc., almost unavailable. This opinion, however, was not justified by experience; and we feel satisfied, to-day, that Ferns are the favorites with our amateur gardeners for decorative purposes. It is true, that many of them require an atmosphere full of moisture, more than we can give them in our rooms at home; but while some varieties are naturally better adapted to a dry atmosphere we may acclimatize others by careful treatment, making the change from a moist atmosphere to a dry one gradually.

Ferns, and particularly tropical ones, should not have a sunny exposure; in nature they grow to greatest perfection in the shade of almost impenetrable forests, and we are therefore fully justified in providing plenty of shade for them, particularly during hot weather.

In regular Fern-houses moisture should be produced in abundance by sprinkling the foliage and the floor of the house. In very hot weather this may be done several times during a day. The watering or rather sprinkling of them should be given in the morning, so that it may soon evaporate and fill the atmosphere with moisture; if done in the evening, and the water is permitted to stay on the foliage until next morning, the plant is apt to decay.

We frequently hear of another great mistake in the cultivation of this class of plants, and that is the practice of keeping them growing continually. Ferns, like all other plants, must have their season of rest, after which they will produce fine large foliage; and unless rest is given to them occasionaly, the roots will soon be exhausted, and before many months the plant will be worthless, if not entirely lost.

Nothing is more injurious to Ferns than drafts or strong currents of air, although air should be given whenever practicable.

As for soil, we can recommend peat mixed with sand and a small quantity of broken pieces of brick and charcoal; Silver-ferns will do well by adding a small portion of Sphagnum, cut up in small pieces. If planted in pots or boxes they should be well drained.

The propagation of Ferns is practiced in various ways and methods; first by dividing up the roots, which is done in the same way as in propagating other plants; second, by

spores, which is the most remunerative, but also the most troublesome method. The ordinary way of doing this, is, to take some pieces of old rotten bark, overgrown with moss, clean these pieces entirely from insects by exposing them to a strong heat, and lay them in a box, partly filled with white sand and covered with glass; it is best to place this box in a warm situation inside of the green-house. On these pieces the spores are deposited, and whenever they require watering, they should be put into a basin of water and immediately returned to their box. After the young plants have made their appearance, some of them are very apt to damp off on account of watering too much or from the effects of mildew; as soon as this is observed, they should be transplanted at once. This transplanting should be done into three inch pots, in the bottoms of which a few broken pieces should be placed for drainage; these should then be filled up with pure sand, to within one inch of the rim, so that they may be covered with a piece of window glass; when the plants begin to show stronger growth, they may be transplanted again into sand mixed with a small portion of peat, after which the soil should be given as directed before.

Another way of propagating some Ferns is by carefuly transplanting the young and delicate plants which are formed upon the leaves of older plants. It will hardly be necessary to state, how delicate this process is and how carefully the watering must be performed; yet, one will soon be accustomed to the work, by repeated practice; if done rightly, this is the most successful method.

We cannot begin to give a list of all the Ferns, which are well worthy of cultivation; the number is very large. Some of the best are *Adiantum* of which there are about eight varieties. Several of these which are very beautful are natives of California. They are used to great advantage in bouquets, and our florists cannot raise enough of them to supply the demand. The popular name with us is "Maiden-hair," and originated from *Adiantum Capillus-veneris*, which is one of the varieties of this family. They do well in a shaded place, and we would recommend in watering them to place the water in the saucers in which the pots stand.

Aspidium, of which several varieties exist, are also very desirable Ferns; some of them have fronds from two to three feet in length.

The *Pteris* family comprises some of the most beautiful of this class. A number of the *P. argyraea* are cultivated here, and do well under ordinary circumstances. *P. tricolor* is probably the finest; the upper part of the segments are dark green, the base silver-gray, and the centre is of a lively purple. *P. umbrosa*, a native of Australia, is also a very desirable variety.

Asplenium, *Cyathea* (mostly Tree-ferns) *Polypodium*, and *Selaginella*, are all good and worthy of extensive cultivation.

Ferns are decorative plants, and as such used for many purposes, but our space will not permit us to describe the various ways in which they may be properly displayed. At some future time we will make this a special subject.

A New Industry.—The sweet potato, used in various forms as an esculent, in making bread, as a substitute for coffee, in the brewing of beer, as well as for fattening farm animals is now beginning to be used in making syrup "far surpassing that of the beet and of the sorghum in delicacy of flavor, while the yield is much more abundant. The average product of a bushel of sweet potatoes—the yam variety being preferred—is alleged to be over two gallons, and as the average yield per acre on poor, sandy soil, is from 150 to 180 bushels, the product must necessarily be from 300 to 350 gallons of syrup. This must open to the view of the piney-woods agriculturist a new and most profitable industry, one man, with a mule, being able to cultivate at least fifteen acres in potatoes. The residuum, after the juice for syrup has been extracted, is pronounced a valuable edible either for man or beast."—*Monthly Report of Agricultural Department.*

Rhubarb.—Keep the flower-stalks cut off, as they needlessly exhaust the plants.

BIG TREES OF CALIFORNIA,

(Sequoia gigantea.)

Among the natural wonders of California the "Big Trees," which are to be found growing on the western slopes of the Sierra Nevadas, at an elevation ranging from 5,000 to 7,000 feet, are well worthy of our attention. They are divided into distinct clusters or groups, by the river valleys and deep canons, which have their outlets on this side of the mountain chain.

The most northern group is the one known as the "Calaveras grove," situated in the county of that name, about 150 miles east of San Francisco. Its elevation is 4,759 feet, and it contains about 200 trees. To the south east, at a distance of about fifty miles, is to be found the Mariposa group, which consists of two portions, an upper and lower; the first it is said contains four hundred and thirty, and the latter nearly two hundred trees; these trees are at an elevation of six thousand and five hundred feet. A third group has been found eight miles southeast of the Mariposa grove, in Fresno County and still others are reported, east and south, about fifty miles from Visalia, in Tulare County. These last are at an elevation of over 7,000 feet, and unlike those growing to the northward, they are not found as separate groups, but are scattered here and there throughout the forest for several miles.

It will be observed, then, that these trees grow in a belt. which has its highest point in the Southern Sierra Nevadas, and passing to the northward dips down from 7,000 feet to a little under 5,000.

The *Sequoia gigantea* is identical in every respect with the *Sequoia sempervirens* (Redwoods) of the Coast Range, with the exception of their great size. They have the same property of condensing fogs and mists which is so characteristic of their brethren of the coast, and the writer well remembers a visit made to the Mariposa and Calaveras groves in 1861, at which time he had the opportunity of observing this action.

Only the trees of the Calaveras and the Mariposa groves have been measured, with the exception of one or two in the Tulare district. Here, one was found to measure one hundred and six feet in circumference at its base, and two hundred and seventy six feet in height. It had been burned on one side, and when entire, must have had a girth of from one hundred and fifteen to one hundred and twenty feet. This tree, however, at twelve feet from the ground, was only seventy-six feet in circumference. These measurements were made by the field party of the State Geological Survey; during the summer of 1864. The writer, in the spring of 1861, measured a number of the trees in the Mariposa grove, the largest of which was ninety one feet in circumference and about three hundred and sixty in height.

In conclusion, let me give your readers a list of these trees, measured in the Calaveras grove by Dr. Charles T. Jackson and Mr. Joseph B. Meader, in the year 1865.

NAME OF TREE.	HEIGHT. Feet.	CIRCUMF. Feet.
Arbor Vitæ Queen,	258	31
Pride of the Forest,	260	50
Andrew Johnson,	273	32
Bay State,	280	48
Edward Everett,	265	46
Henry W. Beecher,	291	45
William C. Bryant,	305	49
Abraham Lincoln,	281	44
Mother of the Forest,	305	63
Daniel Webster,	270	49
General Jackson,	320	42
General Scott,	327	45
General Washington,	284	52
Beauty of the Forest,	258	——
Two Sentinels,	315	——
Old Kentucky,	277	45
Mother and Son,	269	64
T. Starr King,	366	50
Trinity,	308	48
Salem Witch,	310	——
Henry Clay,	241	44
Empire State,	275	50
Vermont,	259	44
Granite State,	286	50
John Torrey	——	50

S.

ENUMERATION OF SHRUBS AND TREES

Growing in the vicinity of the mouth of San Francisco Bay.

BY PROF. HENRY N. BOLANDER.

The territory in question is divided naturally into three parts :

1. The northern part of the peninsula of San Francisco, with an undulating and hilly surface, consists of drifting sand, with a small percentage of humus mingled with it.

2. The Oakland Hills, running N. 54° W. mag., from the Bay of San Pablo to San Leandro, a distance of twenty-three miles, with the adjacent slopes and valleys. Heavy clayey soil predominates; but where shrubs and trees grow, it is mostly a loose, light, and slightly sandy soil.

3. That part of Marin County between San Rafael, the head of Tomales Bay and Bolinas Bay, forming a triangle, with a hilly surface, the ridges running N. 54° W. mag. Soil a heavy clay, in the valleys and on bare hills; or a light, slightly sandy loam among shrubs and trees.

In all parts a metamorphic sand-stone underlies the soil.

Berberis (Mahonia) aquifolium Pursh.

A low evergreen shrub, three to four feet high, not gregarious; in clay soil on the hill sides; rare.

Dendromecon rigidum Benth.

A shrub with slender upright branchlets, four to six feet high, rare; on white sand-stone, Oakland hills, third range eastward, not gregarious.

Rhus diversiloba Torr. and Gray. Poison Oak.

Everywhere, deciduous, exceedingly variable, three to eight feet high.

Negundo aceroides Mœnch. Box Elder.

A medium sized tree, twenty to thirty feet high; common among the Oakland hills, on banks of creeks.

Aeer macrophyllum Pursh. Large-Leaved Maple.

Common on the banks of Walnut Creek, N. W. of Mount Diablo; fifty to seventy feet high, and two to five feet in diameter, in light sandy soil.

Æsculus Californica Nutt. Horse-Chestnut.

Mostly a shrub, seldom a medium sized tree, largest on the banks of creeks and moist hill sides; grows commonly in groups. Common.

Euonymus Occidentalis. Spindle Tree.

A shrub seven to fifteen feet high, with slender upright branches; in swampy places, near the head of Tomales Bay; rare.

Frangula Californica Gray. California Buck-thorn.

Very common, variable, four to ten feet high; evergreen, gregarious, in clayey soil.

Ceanothus thyrsiflorus Esch. California Lilac.

Very common, and variable in size, sometimes handsome trees; exceedingly gregarious, forming dense chaparral, on the northern and eastern slopes of hills and mountains; evergreen. Much cultivated on account of the profusion of its fragrant flowers, and the various shapes that may be given it by trimming.

Ceanothus rigidus Nutt.

Low, straggling, four to six feet high, less gregarious than the former; on the white sand-stone hills, east of Oakland.

Ceanothus dentatus.

A small shrub, three to four feet high, with very small glandular leaves; mostly single or in groups, on Mount Tamal Pais at 2,700 feet elevation.

Lupinus albifrons Benth. Silver-Leaved Lupine.

Very common in almost pure sandy soil, oblong in outline, two to six feet high; growing mostly single, evergreen.

Lupinus macrocarpus Hook. and Arn. Yellow Lupine.

Large, spreading, oval in outline, evergreen, with large fragrant flowers; gregarious in moist gravelly places along the shore of the bay, and in depressions, or banks of runs, where the soil partakes of a clayey nature.

Pickeringia montana Nutt.

Large, spreading, four to seven feet high; evergreen and gregarious on the Oakland white sand-stone hills.

Cerasus ilicifolia Nutt. California Cherry, or Plum.

A small tree, eight to fifteen feet high, with thick, shining, spinously serrate, evergreen leaves; fruit of a yellowish-pink color, with a thin pulpy external portion. Hill sides on the peninsula of San Francisco, growing mostly in groups; rare.

Cerasus serotina Ehrh. Black Wild-Cherry.

A group of three or four small trees, eight to twelve feet high, near a road in the Oakland hills. Undoubtedly introduced from the Atlantic States.

Cerasus emarginata? Dougl.

A small shrub, three to four feet high, with very slender reddish and white dotted branchlets, and deciduous leaves; rare. Tamal Pais, 2,700 feet elevation.

Nuttallia cerasiformis Torr. and Gray.

Oblong in outline, four to six feet high, deciduous; common on the northern slopes of hills, in clayey soil. Along the bay and Oakland hills.

Spiræa opulifolia Linn. Nine-Bark.

Large, spreading, eight to fifteen feet high; common on the banks of creeks among the Oakland hills.

Spiræa ariæfolia Smith.

Common on banks of creeks and northern slopes of hills, Oakland.

Cerocarpus parrifolius Nutt.

Rare on the hills in Marin County. Its spirally-tailed seeds give the shrub an appearance as if in full blossom.

Adenostema fasciculata Hook. and Arn.

Oblong in outline, four to five feet high; very gregarious, forming extensive and dense chaparral on the southern and western slopes of the Oakland hills; evergreen.

Rubus Nutkanus Lindl. Thimble-Berry.

Rubus velutinus Hook. and Arn.

Rubus macropetalus Dougl. Blackberry.

Northern slopes of hills, Oakland and Marin County.

Rosa blanda Ait. Wild Rose.

Very common on the banks of creeks, forming thickets. Oakland hills and Walnut Creek.

Rosa gymnocarpa Nutt.

Hill sides, Oakland. A small but beautiful species, rather rare.

Photinia arbutifolia Lindl.

A handsome evergreen tree of medium size, in sandy soil. Common everywhere in the vicinity of water and springs.

Amelanchier Canadensis. Var. Alnifolia Torr. and Gray. Service-Berry.

Northern slopes, four to twelve feet high; in clayey soil, at Mission Dolores and Oakland hills.

Ribes diviricatum Dougl. Black Gooseberry.

Ribes glutinosum Benth. Red Gooseberry.

Ribes malvaceum Smith. Black Currant.

Banks of creeks and northern slopes.

Whipplea modesta Torr.

In loose light soil, in the Redwoods; one to two feet high, rare.

Cornus pubescens Nutt. Soft-Leaved Dogwood.

Large spreading, ten to fifteen feet high.

Banks of creeks, Oakland hills.

Lonicera involucrata Banks. Twin-Berry.

Large, with slender upright branches, ten to fifteen feet high. Borders of creeks and swamps, Bay of San Francisco, Oakland, Marin County.

Lonicera Californica Torr. and Gray; *et var. hispidula.* Honeysuckle.

Slender, climbing; borders of streams. L. *hispidula*, on the out-croppings of white sandstone, Oakland hills.

Symphoricarpus racemosus Mich. Snow-Berry.

Forming thickets in depressions on the Oakland hills, at 2,000 feet elevation, and along streams in the valleys. Clay soil—three to four feet high.

Sambucus glauca Nutt. ELDER.

Sambucus pubens Mich. RED-BERRIED ELDER.

Dry hill sides and borders of wet places. *S. glauca*, often tree-like and twenty feet high. Oakland, Marin County.

Aplopappus laricifolius Gray.

A low fastigiate-branched shrub, one to three feet high; very common in drift-sand on the peninsula of San Francisco.

POPULAR BOTANY.

CHAPTER X.

We shall conclude our remarks upon the leaves by referring to their death and fall. Leaves are said to be *fugacious* if they fall soon after their first appearance; if they live but only one season, and fall in the late summer or autumn, they are said to be *deciduous;* while if they remain throughout the cold season, and until new leaves are developed, they are said to be *persistent.* Plants having this charateristic are called *evergreens;* a name given to them from the fact, that at no time are they destitute of leaves. In nearly all cases leaves live but for a year, though there are some trees (as the Firs) whose leaves live, and continue in active duty for a number of years.

This falling of the leaves at a certain period of their existence, is not occasioned by the action of frost, as is generally supposed; for we find them losing their vitality long prior to the first frosts, and when spring vegetation is destroyed by late frosts, the leaves do not as a general thing drop, but remain on the tree or shrub in a blackened and shrivelled condition. The fall is due to the formation of an articulation at the base of the petiole, where it rests upon the stem. After the leaf is developed, it progresses rapidly in its growth, and in a short time attains its full size. The base of the leaf is now no longer able to increase at the same rate as the stem, and so a joint is formed at its base, which, in its growth pushes the leaf from its point of attachment. This annual production of leaves is a vital necessity to all plants, no matter where, or how grown.

Water in the form of rain, is the medium through which the plant derives its nourishment from the soil. This the plant absorbs through its roots in the form of a vapor, after it has been impregnated with the necessary mineral constituents required by it; now, as the leaves act as the lungs or oxydizing organs, and exhale a large amount of the water received by the roots, there is necessarily left behind in their textures a certain quantity of this mineral matter, which, at last, so fills up the interstices as to render the leaf useless and unable to perform its duty. In deciduous plants, at this point comes a season of repose, and they do not start into active life again until the following spring, when new leaves are developed. In the evergreens, however, this action is continually going on; old leaves falling, and new ones appearing.

Having in these papers passed in review the principal organs of plants, such as the root, stem and leaves, we shall, before touching upon the action of flowering, give a few thoughts to the food and nutrition of them.

Vegetation, as we have said previously, is the connecting link between the inorganic world and animal life. There are two classes of materials found in all plants; one of these, the mineral or inorganic constituents, may to a certain extent be called accidental, and although in some cases essential, yet in a broad sense they are *not* necessarily so. The other class, however, carbon, hydrogen, oxygen and nitrogen are absolutely *sine qua non.* These four elements are absorbed from the soil and the air. The oxygen and hydrogen are supplied in the form of water, and no doubt but that a large amount of nitrogen is conveyed to the plant by this means as well. Nitrogen forms a large percentage of atmospheric air, and being only mechanically mixed with the oxygen, is readily dissolved by the falling rain and so carried to the roots of the plant. But a much larger amount of nitrogen is added to the plant in the form of ammonia, a compound of hydrogen and nitrogen produced by the decay of animal and

vegetable substances. This fact has led to the use of the different varieties of fertilizers and manures, whose valuable properties depend upon the amount of nitrogen which they contain. The remaining element, carbon, and which makes up the principal part of all plants, is mainly derived from the atmosphere, where it is largely found in the form of carbonic acid gas. There are two ways in which it enters the plant: one by the way of the leaves, which directly absorb it, and the other by the roots, to which it is carried, dissolved in water.

The atmosphere, then—if we consider water in the form of vapor a part of it—is the great source from whence vegetation derives its food.

In our next chapter we shall show how the plant, after receiving this food, digests and converts it from unorganized matter into living structure.

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION X.

In our former numbers we have endeavored to present to the readers of this Magazine general instructions for the laying out and planting as well as for the management of the ground around a city residence, or a small country one which we have elected to call a fourth rate garden, a term which has been used by some of the best authors on Landcape Gardening, and which should be applied to the grounds of a residence bordered and defined by close neighbors and public streets.

The arrangement of such grounds is to a great extent determined by the surroundings already existing, and we are frequently under the necessity of conforming with the conceptions of our neighbors or of (arranging) in conformity with improvements already established. The effect to be produced in such a case must necessarily be circumscribed to the inside arrangement.

We now propose to give our ideas in regard to the arrangements around a country residence of larger dimensions, where we are not restricted by streets and close neighbors, and where the surroundings and approach may be beautified in a becoming manner. Such a residence we shall call a third-rate, and the dimensions of the ground should be from one to three acres. In selecting the grounds for a third-rate country residence, many important points must be taken into consideration:

1st, Convenience in reaching the place of business;

2d, Pure and healthy atmosphere;

3d, Soil, and water for irrigating purposes;

4th, Surroundings and scenery, and,

5th, Natural attractions and improvements already existing.

As to the convenience of traveling to and fro, we are very much opposed to the selection of grounds too close to the public roads, railroad, or steamboat landings, and decidedly so to the building of a residence in close proximity to public highways, which are very annoying in many respects. The dust of a frequented road deprives us of the refreshing pure green of vegetation; the right of all classes of mankind to congregate within our hearing, the deprivation of privacy, and the many dangers to which we are subject, are all objectionable.

The atmosphere should be pure and healthy, and an elevated locality is therefore always preferable. The neighborhood of factories and the close proximity of low, marshy land should be avoided.

The soil should, at least, be of a good average, a deep light loam is the best; although almost any kind of soil may be put in condition for cultivation by expenditure of money and labor; but even the best soil will not be productive of much good, unless a good supply of water for irrigating purposes may be obtained. Where running streams and springs can be made available, they are preferable, but where nature does not supply this most indispensable necessary for vegetable life, artificial means must be brought into requisition. We often wonder why more steam-pumps are not erected in this country, which certainly can be depended upon, if wells are constructed properly; the expense of supplying grounds with water by such pumps

would be very small, and pressure can be obtained sufficient to use hose, and play fountains. Windmills are good enough as long as they can be kept in motion; horse power requires more attention than steam, while the expense of a horse is not much less than the fuel used for a steam-pump.

Surroundings and scenery add much to the attractions which a country residence may offer. An elevated position should therefore be selected. Nothing heightens the effect of landscape more than a commanding view of such striking or interesting points as the surrounding country may possess.

The natural attractions and improvements which already exist may save a great amount of expense, add to its picturesqueness, and relieve the grounds of much of their new appearance. We often see ignorance and barbarism displayed in bringing the axe and saw into requisition for the destruction of that, which a true and experienced landscape gardener would have turned to very good use, and which cannot be replaced for years to come.

If all these points have been here studied by a competent landscape gardener, his work in accomplishing the desired end will be much easier, and the combination of the natural advantages already developed, with his skill to make use of them to the best advantage in the general arrangement, will produce, in a short space of time and at a comparatively small expense, a result, which otherwise would have taken many years to accomplish.

Quail as Insect Eaters.—A boy in Ohio having shot a quail as a depredator on the corn crop under his charge, was induced to examine the bird's crop. He there found one oat-worm, twenty one striped cucumber and one hundred chinch-bugs, but not a grain of corn. Thus the poor quail, while doing its best to benefit the agriculturist, becomes the innocent victim of slanderous suspicion. This bird-killing propensity should be checked by severe legal remedies.

CALIFORNIA FRUITS AND FLOWERS.

Reasons for Satisfaction.—A Short, suggestive though imperfect List of Fruits adapted to our Soil and Climate for beginners in Fruit Culture.

If there be one thing more than any other that the dwellers in this remarkable and in many respects, unique and grand State have to congratulate themselves upon, it is in the wonderful, varied, and immense productions of its fruits and flowers. All of them being almost entirely beyond the baneful effects of frosts, destructive insects, great floods, or even droughts, these last chiefly affecting the grains. As to the first, so hurtful in the greater portion of the more Eastern regions, especially in late spring; and which in some of their winters destroy even the very trees themselves; the freezing in California, except in very elevated lands, creates a skim on the ponds and lakes no thicker than a quarter of a dollar. As to injurious insects, there are at present but very few, and their inroads on fruits, flowers, grasses and grains, are trifling compared with these terrible scourges of Eastern orchards and gardens, destroying as they do, (and they are still multiplying at a rapid rate,) enormous quanities of fruits as well as trees, rendering Plums almost a total failure, killing Peach and other trees, and making many fruits altogether unmarketable. As to the want of sufficient rain here, some seasons, say at most, two years in five—this does not injure, in general, any fruit trees after their first year's planting, and during this first year, irrigation must be resorted to; therefore the drought, when excessive, affects grasses and grains, and small plants alone, and then only when artificial watering cannot be used. How fortunate are we, too, in comparison with our Eastern friends, even when the seasons are most favorable, to have the enjoyment of so many more fruits than they have, owing to our semi-tropical, and in some parts tropical climates; and particularly in having unlimited yields of those delicious fruits, Apricots, Nectarines and exotic Grapes.

With regard to flowers—those beautiful and refining companions of our existence, which delight our senses both of sight and smell, embellish our dwellings internally and externally—we have hardly any need of hot-houses or conservatories, unless we wish to add to the lengthy list of those which bloom and flourish so well in the open air, those which are of the most tender and tropical character. Then as to the size, both in height and breadth, of our ornamental plants, in what part of the Eastern States, in the open garden, shall we find the Fuschia, Geranium, Lemon Verbena and numerous other plants growing to the height of ten feet? Where in the East can the Peac tree from the seed produce fruit in 17 months? Yet the proof can be adduced at any time of this fact from one of the most respectable and reliable of living nurserymen. The truth is, trees of all kinds grow nearly twice as fast as in the East, and come into bearing in less than half the time. Our atmosphere is so dry during the whole season that rotting of the fruits on the trees is unknown, and they remain on them in sound condition long after they are ripe, thus greatly prolonging, with safety, the season of gathering.

In what clime after the dry season has commenced, for a period of between four and five months, is there less labor required to keep the ground in good order, and above all, free from weeds? It is true, however, that the necessity for good culture exists here no less than in any other part of the world, owing to the exhausting nature of a climate where heat and drought are so prolonged.

I would here, in closing this discursive letter, present the following limited, but, it is believed, correct and reliable list as far as it extends, of fruits found by practical cultivators and salesmen in this State, best suited to its soil and climate, and most profitable for the cultivator, and, to a considerable extent, suited to the taste of the consumer.

Apples, *Summer Varieties.*—Red Astrachan, Red June, Summer Bellflower or Yellow B. Early Strawberry, Summer Rose, Early Harvest (Prince's) and Keswick Codling.

Fall Varieties.—Gravenstein, Porter, Siberian Crab, Fall Pippin and Æsopus Spitzenberg.

Winter Varieties.—Baldwin, Roxbury Russet, White Winter Pearmain, Yellow Newtown Pippin, Newtown Spitzenburg, Swaar, Winesap, Rhode Island Greening, Jonathan, Blue Pearmain, Green Newtown Pippin, Nickajack, Mammoth Pippin, Fallawater, Ortley Pippin, Alexander, King's Apple, Smith's Cider and Rome Beauty.

Pears, *Summer Varieties.*— Madaline, Dearborn's Seedling, Bartlett, Bloodgood, Doyenné d'Ete and Flemish Beauty.

Fall Varieties.—Duchesse d'Angouleme, White Doyenne or Virgalieu, Seckle, Buerré Diel, Buerré Hardy, Washington, Buerré Gifford, Buerré d'Anjou, Vicar of Winkfield, Dix and Rostiezer.

Winter Varieties.—Winter Nelis, Easter Buerré and Glout Morceau.

Quinces.— Orange and Apple.

Cherries.—Black Eagle, Black Tartarian, Governor Wood, Holland Bigarreau, Napoleon Bigarreau, Knight's Early Black, Royal Anne, May Duke, Late Duke, Black Hawk, Yellow Spanish and Elton.

Plums.—Washington, Coe's Late Red, Coe's Golden Drop, Damson, Ickworth's Imperatrice, Duane's Purple, Green Gage, General Grant, Hungarian Prune, German Prune, Early Orleans, Lombard and Jefferson.

Apricots.—Moorpark, Early Golden, Large Early and Duboise Early Golden.

Peaches.—Early Tillotson, Early York, Early Crawford, Hale's Early, Large Early York, Strawberry, Royal George, Melecaton Red Cheek, Mammoth Melecaton, Smock Free, Old Mxon Free, Morris White, Heath Free, Heath Cling, and Old Mixon Cling.

Nectarines.—Large White, Large Red and White, Orange and Golden.

Grapes for Table, *Black Varieties.*—Black Hamburg, Black Prince and Black Morocco.

White or Amber-colored Varieties.—White Muscat of Alexandria, White Sweet-water, Chasselas de Fontainbleau, Cannon Hall Muscat, White Malvoisie.

Rose-colored Varieties.—Flame-colored Tokay and Rose of Peru.

Hardy Variety, suited to elevated mountain regions.—Isabella.

For Wine.—Riesling, Mission, Zinfindel, etc.

Strawberries.—Longworth's Prolific, Triomph de Grand, British Queen, Jucunda, Wilson's Albany and Kentucky, (very late.)

Raspberries.—Red Antwerp and Falstaff.

Blackberries.—Lawton or New Rochelle, Kittatinny and Dorchester.

Currants.—Cherry, Red Dutch, White Dutch or White English and Black English.

Walnuts.—American Black, large, California Black, Butternut, Hickory nut, Pecan nut and English. E. J. Hooper.

San Francisco, August 7th, 1871.

ESSAY,

Read by Col. D. S. Curtiss, on invitation, before the Potomac Fruit Growers' Society, at Washington, D. C., July 11th, 1871.

Mr. President and Members of the Society:—*Association* is the genius of the age—the distinguishing feature of the times. All great enterprises—religious, moral or mercenary—adopt this great attractive principle, and without it none expect extended or permanent success.

Association is really the great fulcrum of all powerful movements, and the *Press* is the subtle lever by which they are moved. Artists and artizans—mechanics and merchants—all trades and professions have their unions and societies. These organizations are now as common as the works of their heads and hands—while all, to some extent, have peculiar means of *identity* and *fraternity*. All have their systematic organizations and combinations, for mutual protection and enjoyment, and into whose sacred circle none are admitted but members. All have embraced this effective operation *except* that great and important class *which feeds and sustains* all—the farmers and producers—upon whose labors and prosperity all other business depends for prosperity and support.

And if the farming community do not speedily arouse themselves and promptly adopt this great element of pecuniary and intellectual advancement, they will soon find themselves outstripped by all other callings of their more wise and fortunate brothers.

Besides, it is the duty, as well as the privilege, of that responsible class which feeds all and upon which all depend, that they should use all means and avail themselves of every facility for rendering them as effective and powerful as possible. Being the basis and support of all, it is the duty *and privilege* of the farmer to take the lead of all in the march of intelligence, prosperity and enjoyment. And this *can* be done by *association only*.

The peculiar character of the farmers' business renders them more isolated and more widely spread in their communities than are other professions; and in consequence of this sparse nature of their settlement they are less social, and, of course, enjoy less of joyous and instructive conversation and comparing of notes, which is so conducive to knowledge and intelligence.

"The isolation of families, occasioned by the sparse settlement of farming districts, has been not only a personal hardship, but a bar to material progress. Dull and hopeless monotony on isolated farms has driven many a bright boy from the farm-home, and deprived agriculture of much-needed intelligence; but more unfortunate still has been that inertia and torpidity engendered of solitude, rendering the mind inimical to reform, however advantageous. Often beyond the reach of his nearest neighbor, visiting the village but once a week, the farmer has been secluded from communion with his kind; and, thus cut off from the current of progress, his life's business was left for generations among the most backward of industries; his children

growing up to follow his steps, as he followed his father's and grandfather's before him."

Happily, this is not *now* so much the case as it was when some of us were boys, and even before some others of you were born. The great improvements of the age, in mechanism, intelligence and facilities for transit, have much ameliorated this condition.

Here is one significant central fact that we will do well to look at in the outset, which is the very *small representation and influence* that farmers have in our legislative halls—national and State. At the organization of the last session of Congress there were present 219 members; and how many of these do you suppose were farmers, to represent this great, peculiarly farming nation? In that body there were 134 lawyers, 11 farmers, and 64 of all other classes. Yes, in 219 members of Congress there were 134 lawyers, and only 11 farmers—not one-twentieth of the representation from that class which produces all and feeds all, and which outnumbers any other class in the nation. Is it any wonder then that so little legislation is enacted for the benefit of agriculture, and so much for commercial and legal professions? Is it any wonder there is so much law that even the well-read can scarcely understand—laws framed and worded purposely to require the services of lawyers and to sustain their profession, and for which the producing laboring classes must pay? And this will be so, just so long as farmers refuse to unite for their common knowledge, influence and elevation.

Even the standing Committee on Agriculture, in both Houses of Congress, show an equally meager representation of farmers. For instance:

Senate Committee.—Simon Cameron, of Pennsylvania a politician; Thos. J. Robertson, of South Carolina, doctor and planter; Thomas W. Tipton, of Nebraska, lawyer and preacher; Abijah Gilbert, of Florida, a merchant; Thomas C. McCreery, of Kentucky, a lawyer and planter.

House Committee.—J. T. Wilson, of Ohio, a merchant and farmer; William Loughridge, of Iowa, a lawyer; John Fisher, of New York, a merchant and iron manufacturer; William J. Smith of Tennessee, a painter and horticulturist; David P. Dwyer, of Missouri, a lawyer; Jacob Benton, of New Hampshire, a lawyer; John M. Crebbs, of Illinois, a lawyer; Samuel B. Axtell, of California, a lawyer; Henry A. Reeves, of New York, studied law, and an editor.

While visiting the great agricultural States, Pennsylvania and Ohio, last winter—I had access to lists of the members of the Legislatures of those States, and found that an equally small proportion were farmers—though farming is the chief business.

Now, I do not insist that farmers shall become politicians—but they ought to study the policy of the nation, and elect a number of their own profession, equal in proportion to their number of voters, and the vast and vital importance of their business, if they expect equal justice in the laws, and to be properly protected by government. Therefore, as all other callings and professions adopt this potent and magic influence to advance their interests, farmers must do the same, or they will soon find themselves fatally falling behind all others on the march of improvement and scientific progress which distinguishes our age.

Their union in association will greatly aid them in procuring information and education on all topics useful to them; and by it they will be, in a large degree, better able to take advantage of the markets, and control the prices of their own products, which are now almost entirely dictated to them by brokers and speculators. It will also largely afford them the power and facilities for making their just rights and [illegible]e better known and more properly felt and regarded in legislation and elections. It will make them better acquainted with one another, with each other's views, and lead to harmonious co-operation.

Members thus associated for their common good meet in their mystic circles, in complete confidence, on a common plane of safety, fearing no *shams* or *impositions*—for common interest and fraternal regard—leaves no motive to deceive any among themselves,

while they are protected and guarded against impostors from without, thus enhancing business facilities and social enjoyments.

Too constant confinement at home and the farm, and the absence of frequent commingling with our fellow-beings in social intercourse, is liable to dwarf the mind and contract the spirit of enterprise; while frequent and systematic association with our kind will expand the intellect, elevate its aims, and give wholesome breadth to ambition; inciting emulation and friendly competition, by widening the range of thought and investigation in all the sphere of our operations. Such, in brief, would be some of the effects of proper association among farmers, if they were organized in some fraternal and systematic order, which should be uniform throughout the country and world, and mutually understood by all.

With minds as great and purposes as honorable as any, all that farmers now need to raise themselves to a commanding position of power and influence, inferior to none, superior to all, is harmonious organization and concert of action; and by it they would speedily rise to a degree of knowledge and efficiency commensurate with the vast importance of their calling.

Intelligence should be the basis of all association, as it should be the chief motive of all enterprises; only by *it* can the command to possess and subdue the world and enjoy it, be complied with; by intelligent thought, actively developed in works, are the elements of nature understood and subdued, and applied for our use and profit.

Such an association, such an order has been established, and is in beautiful operation in many of the States of the Union; from which the farmers and producers belonging to it, are already signally realizing the benefits of it, not enjoyed by those not members. This Order is based on wide, firm, scientific principles. It is styled the *Patrons of Husbandry*.

A number of intelligent, philanthropic, thinking gentlemen—of this country and Europe—producers of thorough experience, assembled in this city several years ago, after long and careful deliberation, devised the plan and prepared the ritual and constitution of this Order, to meet the wants of all classes of farmers and horticulturists, and furnish them with the greatly needed facilities for protection against the schemes and operations of sharpers and speculators. That devoted body of men spent many anxious and thoughtful days in this noble labor of love and science.

The forms of the Order consist in a National Grange, established here at Washington, the National Capital, with provisions for State granges in all of the States, and subordinate granges in counties and towns, wherever the producers may choose to organize them. Its society consists in membership of all who are engaged or interested in the prosperity and elevation of agriculture, as farming, gardening, horticulture and stock raising, etc., and comprising parents of *both sexes*, with their children—thus embracing the *entire family*, as all its members are alike interested in its welfare and highest culture and happiness—requiring the fraternal pledge, of all, to truth, honor and fidelity to each other and the Order, with secret or confidential means of recognition and admission into the granges or lodges. Such are the form and construction of the Order. The motives and details of its business are to collect information, impart instruction, enlarge the social intercourse, and secure protection and efficient co-operation for the common good. Partizan politics are disclaimed by the Order, and partizan discussions excluded from the granges—members being free to vote for such candidates and parties as they may choose and believe will best promote the highest welfare of the country and its producers.

The highest and most beautiful effects to be produced by this systematic association among farmers would be social and intellectual improvements and enjoyments of both sexes.

To a large extent, the men who make the laws control the liberty and prosperity of the people; hence it is of the highest importance that the producing classes should look well to it who are elected to make their laws. In association there is power, as in knowledge:

in familiar and frequent discussions they are enabled not only to determine who is suitable and what is wanted, but also to better qualify themselves and secure wise selections. Discussion and comparing views will elicit truth and correct error, better than eloquent lectures and studied essays, by prompting inquiry and reply, bringing out the united experience and ideas of the many, to be criticized and tested by the inspection and observation of all. And this is the regular practical result of proceedings in the granges of the *Patrons*. And it is a rapidly growing Order—its numbers continually increasing in different States—and it must speedily become a controlling power in the land, elevating the producers and controling the markets for the benfit alike of producers and consumers; so that, instead of being victims and a subordinate class, farmers will be *first* in dignity and power, as they already are most essential and important.

But to effect this, they must have a livelier regard for the useful library than for the costly parlor; they must be more willing to make liberal expenditures for books and papers than for tawdry and fashion. Let every one to whom the query is applicable answer to himself how many are there who expend hundreds of dollars to ornament the parlor, while hardly ten dollars are expended for practical and scientific books to enlighten and aid yourselves and families in prosecuting your business?

The influence exerted in the Granges of Patrons is calculated to improve its members, very happily, in this direction; and such is the design, and will be the practical results of association with the Order, on the honest, industrious producers of the country, wherever they unite with the Order.

Then, as is just and appropriate, will the *Feeders* of the nation bear rule over the land —with the *plow*, and not the sword; *then* will all the people, in peace and plenty, honor *Husbandry*, and with joy and gladness bless all its *Patrons*—when *wisdom* will rule the heads and direct the hands, as *charity* will warm the hearts and control the will of men and women.

PARSNIPS need cultivating until the leaves cover the ground.

TIMBER TREES.

We have received a very interesting pamphlet from our esteemed friend, Prof. F. von Muller, of the Botanical Gardens of Melbourne, in which this gentleman enumerates the principal timber trees adapted for Victoria industrial culture. The list comprises nearly three hundred varieties of forest trees, many of which are cultivated in our gardens for ornament, and few of them only for timber. While we see the necessity for encouraging the cultivation of timber trees in this country, it will be well to look about and observe what steps other communities take to bring about the desired result, and what the good qualities are of those trees which we cultivate now for ornament only. We make the following extracts from the list of von Muller's enumeration.

Araucaria Bidwilli, native of Southern Queensland. A tree one hundred and fifty feet in height, with a fine-grained, hard and durable wood; the seeds are edible.

Araucaria excelsa (Norfolk Island Pine.) A magnificent tree, sometimes two hundred and twenty feet high, with a trunk attaining ten feet in diameter. The timber is useful for ship building and many other purposes.

Araucaria imbricata, of Chili and Patagonia. The male tree attains only a height of fifty feet, but the female reaches one hundred and fifty feet. It furnishes a hard and durable timber, as well as an abundance of edible seeds, which constitute a main article of food of the natives. Eighteen good trees will yield enough for a man's sustenance all the year round. In the low lands it is of comparatively slow growth, but likely to be of far more rapid development, if planted in the ranges.

[For many years to come, we will have to content ourselves with cultivating this tree solely as an ornamental one, as both seeds and young plants which are imported, are rare and costly. Mr. Muller had the kindness to send us some of the *Araucaria Bidwilli* seeds; they are about the size and form of large Almonds,

and the young plants are now making their appearance, after being in the ground six weeks. This, we believe, is the first attempt on this coast to raise this tree from seed. Ed.]

Cryptomeria Japonica. A slender evergreen tree, one hundred feet high. It requires forest valleys for successful growth. The wood is compact, very white, soft and easy to work.

[The *C. Japonica* seems to thrive well in California, and as an ornamental tree it is highly esteemed.—Ed.]

Dammara Australis, Kauri Pine, North Island of New Zealand. This magnificent tree measures, under favorable circumstances, one hundred and eighty feet in height and seventeen feet in diameter; the estimated age of such a tree being 700 or 800 years. It furnishes an excellent timber for furniture, masts of ships, or almost any other purpose; it yields, besides, the Kauri resin of commerce, which is largely obtained from the stem of the tree.

Dammara robusta, (Queensland Kauri.) A tall tree, from Rockingham's Bay and Wide Bay. It thrives well in open, exposed, dry localities at Melbourne.

[This tree is well worthy of trial on this coast Ed.]

Frenelas, of different varieties, growing on saline desert flats, where no other conifers will readily succeed. They are important for coast cultivation.

[We have received from the same gentleman seeds of the *Frenela robusta,* and the young trees are doing finely.—Ed.]

Ginkgo biloba, (*Salisburia adiantifolia,*) from China and Japan. A deciduous fan-leaved tree; one hundred feet high, with a straight stem twelve feet in diameter. The wood is white, soft, easy to work, and takes a beautiful polish. The seeds are edible and when pressed, yield a good oil, *Ginkgo* trees are estimated to attain an age of 3,000 years.

Juniperus Virginia, North American Pencil Cedar or Red Cedar. A handsome tree fifty feet high, supplying a fragrant timber, much esteemed for its strength and durability: the inner part is of a beautiful red color, the outer is white: it is much used for pencils.

Nageia (*Podocarpus*) *totara* New Zealand. A fine tree, one hundred and twenty feet in height, with a stem twenty feet in circumference; it is called mahogany pine by the colonists. The reddish, close-grained and durable wood is valuable both for building and for furniture, and is also extensively used for telegraph posts; it is considered the most valuable timber of New Zealand. Many other tall timber trees of the genus *Podocarpus* or *Nageia* occur in various parts of Asia, Africa and America, doubtless all desirable, but the quality of their timber is not well known, though likely in many cases to be excellent. *Nageia* is by far the oldest published name of the genus.

Pinus Cedrus var. Deodora, (Deodor Cedar,) on the Himalaya mountains four to twelve thousand feet above the sea level. A majestic tree one hundred and fifty feet high, and sometimes thirty feet in circumference of stem. The wood is of a whitish-yellow color, very close-grained and resinous, and furnishes one of the best building timbers known; it must however, not be felled too young. The tree also yields a good deal of resin and turpentine.

[The Deodor Cedar is of exceedingly slow growth with us here, but highly esteemed as an ornamental tree, making a very picturesque appearance.—Ed.]

Pinus Halepensis, (Aleppo Pine,) South Europe and North Africa. This well known Pine attains a height of eighty feet with a stem of from four to five feet in diameter. The timber of young trees is white, of older trees of a dark color; it is principally esteemed for shipbuilding, but is also used for furniture. The tree yields a kind of Venetian turpentine as well as a valuable tar. It thrives well in waterless, rocky places, also on the sandy sea coast. *Pinus Maritima* is a variety of this species. Content with the poorest and driest localities and rapid of growth.

[We saw a fine specimen growing on the grounds of—Barron, Esq., in Menlo Park. It is a great pity that this tree is not more extensively cultivated throughout this coast.

ED.]

[To be continued.]

FIRST ANNUAL EXHIBITION OF THE BAY DISTRICT HORTICULTURAL SOCIETY,

Held in San Francisco, August, 1871.

The first annual Exhibition of the Bay District Horticultural Society opened August the 8th, 1871, at the Pavilion in the City of San Francisco.

Mr. A. S. Hallidie, the worthy President of the Mechanics' Institute, in his opening address alluded briefly to this Exhibition in the following very appropriate remarks :—

"The Bay District Horticultural Society holds its first exhibition at the same time and during the same term as the Industrial Fair. This young Society has shown a vast amount of enterprise, and is deserving the utmost success. I trust its membership may be largely increased, and that it may engender a taste for Horticulture among the people of the bay district."

After the introductory speech of Mr. Hallidie and an invocation by the Rev. John Hemphill, the Hon. Milton S. Latham was introduced, by the President, and proceeded to deliver the opening address, which was listened to by a large and appreciative audience. It certainly showed great care in its preparation, and in our opinion was by far the best address ever delivered in this city, on a like occasion. The exercises were interspersed with singing by the pupils of the Denman Grammar School, which all declared to be a most delightful feature.

Entering the large space, set aside for the Horticultural Exhibition, covering an area of 17,500 square feet, the scene which presented itself to the visitor, was the subject of general admiration. A large grassplot of Italian Rye Grass was an agreeable surprise to all who knew the fact, that the managers had only three week's time to make their preparations. This grassplot is planted with various groups of bedding plants, one of Phlox Drummondii, raised by E. L. Reimer; the colors are some of the most brilliant we ever saw and the varieties excellent; the group was bordered by Cineraria maritima. Another bed is filled with a fine collection of Pansies, from the nurseries of Meyer & Co. Considering the lateness of the season for Pansies, the collection is a very creditable one; still another bed is planted with the different varieties of Coleus bordered with Sedum variegatum; the effect is a good one.

The grassplot also contains a fine and choice lot of specimen trees, such as Araucaria excelsa, Araucaria Bidwillii, Araucaria brasiliensis Cedrus Deodora, Abies Menzissii, from the nurseries of Meyer & Co.; a fine specimen of double flowering Oleander ten feet high, full of flowers, by S. P. Simonds, an amateur gardener; a fine fruit-bearing Pomegranate with flowers and fruit and the old fashioned Grape Myrtle (Lager-stroemia Indica) in full bloom, from Sacramento. Two very attractive groups of well grown Araucaria excelsa and brasiliensis, from Mr. Burr, and a fine Lemon tree, full of fruit, from Mr. S. P. Simonds, add much to the appearance of the plot. But the finest plant is an Araucaria excelsa twelve feet high and well proportioned, which is contributed by Mr. Burr.

The grassplot is very appropriately embellished with Marble Statues and vases, which latter are ornamented with beautifnl specimens of Cupressus funebris and the well-known Hydrangea, in full flower; the Wire stands, so gracefully arranged with plants, and contributed by Meyer & Co. and E. Allen & Co., are an excellent addition.

THE FLORAL DISPLAY—*First Week.*

Turning to the right from the entrance we notice, in a large, irregular bed, the collection of Conifers, exhibited by E. L. Reimer of the San Francisco Nursery. The exhibit is a creditable one, and the plants are all well grown. The most conspicuous specimens are Cedrus deodora, Thuya gigantea, Pinus in-

signis, Cupressus Lawsoniana, Cupressus macrocarpa, Libocedrus decurrens, Cupressus funebris, Cupressus pyramidalis, Cedar of Lebanon, Taxus baccata, Juniperus virginica, Juniperus Benthamiana, Juniperus japonica variegata, Pinus Canariensis, P. ponderosa, P. Benthamiana, P. maritima, Abies excelsa, Araucaria imbricata, A. Brasiliensis, Cryptomeria Japonica, etc.

Next we come to a group of flowering plants, exhibited by Meyer & Co., with a magnificent specimen of Dracaena australis, twelve feet high in the centre. We name the following plants in this collection: Veronica fol. variegatis, Oleander, white and red, Hydrangea, with colossal bunches of brilliant flowers, Salvias, Fuchsias, Zonal geraniums, Pelargoniums, Double geraniums, Scarlet geraniums, Begonias, Gloxinias, Agapanthus, Canna, Sollya, Primroses, Mimulus, Lobelia, Lilies of var., Helitrope, Abutilon, Myrtle, Erica, Plumbago, etc.

We now come to the collection of tropical plants, displayed by R. B. Woodward, which is bordered by a fine collection of Ferns. The most noteworthy of this tropical collection are Bananas, Pine-apples in fruit, Cordylines, Dracaenas ferrea and nobilis, Yucca variegata, Dracaena Cooperii, Thuiopsis, Chamærops humilis, Crinums, Alocasia Boliviensis, etc.

Along the south side of the building, to the right, there is a large table, about one hundred feet long, occupied by E. L. Reimer. He displays a fine collection of Roses, the best of which are: Model of Perfection, Lord Raglan, Prince Camilla de Rhone, Giant de Battailles, Madame Vidot, Madame Rivers, Black Prince, Cardinal Patrizzii, Pauline Lanzezeur, Jules Margottin, Louis Philippe, Agrippina, Vicomte de Cass, Isabella Gray, Hermosa, Louise de arc, La Marque, Cloth of Gold, Solfaterre, Triomphe de Luxembourg, Salat moss, etc.

A collection of climbing plants, such as Wistaria sinensis, Passiflora elata, Clerodendron, Stephanotus floribunda, Tecoma jasminoides, Tecoma Australis, Bignonia grandiflora, Bignonia venusta, etc.

A collection of Fuchsias, the best of which are Aime Hoste, Duc de Brabant, Angeline Bramdt, Francis Harry, Swan, Imperatrice, Charlotte, Francis Desbois, etc.

Collection of flowering plants, of which we name only the best: Libonia floribunda, Begonias of varieties, Camellias, Gardeinas, Oleanders, Hydrangeas, Gloxinias, Gesnerias, Achimenes, Agapanthus, Orange, Hibiscus, etc.

Collection of bedding plants, of which the following are most conspicuous: Pansies, Petunias, Verbenas, Coleus, Phloxes, Auriculas, Primroses, etc.

Collection of double Geraniums, which attract a great deal of attention. Many visitors have never seen any of the double flowering Geraniums, and others have not even heard of them before; although mostly small plants, the flowers are good of the varieties.

The collection of tri-color Geraniums is not what we hoped to see; the varieties are few and the foliage is not very distinctly marked; yet the display, although small is a pleasing one.

Mr. Reimer's collection of hardy variegated foliage plants is indeed a fine one, but the number is not very extensive. Some specimens present a really magnificent appearance.

Near the end of this table we notice two gigantic specimens of Tobacco plants, presented by Mr. James Lick, of San Jose. We could not learn what the varieties are, but imagine that they would furnish a good quantity of superior Tobacco.

As we approach the west end of the Conservatory we find, suspended from a neat frame, a number of beautifully arranged Wire baskets and two pairs of Rustic baskets, which are superior in beauty and elegance to anything we have seen for many years. The Exhibitors are Meyer & Co. and E. Allen & Co. Two of the Rustic baskets are contributed by Mr. James Smith. It will be hard work for the judges to decide which are the best and entitled to the premium.

Beneath this frame, on the grass, we notice some remarkably fine specimens of Ferns, mostly natives of California, contributed by Mr. Chiousse ; among which there are Adiantums eighteen inches high and two feet in diameter.

On the inside of the walk leading around the west end, is a Summer-house, of wire, manufactured and exhibited by Mr. Gruenhagen; the pillars are decorated with Ivy, and between them Mr. Joseph Putzer exhibits some well grown specimens of Hungarian Grape-Vines, bearing a number of large bunches of Grapes ; these have been cultivated in boxes especially for this Exhibition. The center of the summer-house is occupied by an earthenware fountain, from the Antioch pottery.

Returning from the west end, and following the southern main walk, we come to an oval center table, upon which Mr. W. Robertson displays a good collection of flowering plants of large size : the center of the group is occupied by a fine Stephanotus in full bloom, which scents the air most agreeably in that section ; a fine specimen of Hoya carnosa, a good collection of Fuchsias, Abutilons, Geraniums, Heliotropes, Grassulas, Pelargoniums, Japanese Lilies, Heaths, Begonias, Chinese Primroses, Cockscombs, and many other varieties too numerous to mention, make up the bulk of this display.

Opposite, on the north side, we find a beautiful and numerous collection of new and rare plants, of which we mention, as the most noteworthy : a goodly number of the Begonia rex family, Gesnerias, Tritonia, Crotons, Cissus discolor, Passiflora tri-farciata, Maranthas, Hibiscus Cooperi, etc. This exhibit is made by Mr. R. B. Woodward, as also a fine and well selected collection of Caladiums, of all possible colors and marks; over twelve of the very best varieties are in this collection.

To the left of the main entrance, we are much pleased with the magnificent collection of Australian Evergreen and Flowering plants, which occupy a large, irregular bed, corresponding with that of the Coniferas to the right. The exhibitor of this extensive and varied assortment is Mr. E. L. Reimer. The number of species is large and too numerous to mention ; but we give some of the best :—

Acacia linearis, A. floribunda, A. cordata, A. armata, A. conspicua, A. rubra, A. lophantha, A. saligna, A. cultriformis, A. pulchella, A. alata, A. latifolia, A. dealbata, A. molissima, A. procumbens, Grevillea robusta, Ficus Australis, F. macrophylla, Chorizema ilicifolium, Melaleucas of different varieties, Podalyria Australis, Escallonia floribunda, E. rubra, Fabricia lavigata, Sanguenaria Pattersonii, Corynocarpus of sorts, Leptospermum of different varieties, Tristania macrophylla, Pittosporum undulatum, P. Tobira, P. nigra ; Psoralea pinnata, P. Australis, Haakeas of sorts, Eucalyptus, twelve different varieties, etc.

Keeping on in the same direction, we come to the collection of flowering plants, exhibited by R. B. Woodward ; the group is arranged very tastefully by an occasional addition of ornamental Foliage plants and Grasses. The most prominent of the collection are: Fuchsias, Geraniums, Pelargoniums, Lobelia cardinalis, Begonias, Coleus, Abutilons, etc.

Next we come to a very numerous collectiou of Climbing plants of over forty varieties, the most conspicuous of which are: the Stephanotus, Hoya bella, H. carnosa, Clianthus, Rhynchospermum, Cissus discolor, Bignonias of sorts, Pelargonium peltatum, Tecomas, Clematis, Honeysuckles of sorts, Ivy, Maurandia, Sollya, Deeringia, Eccremocarpus, Solanum jasminoides, and others.

To give full justice in our report, we cannot omit the collection of "one of ours." F. A. Miller occupies a stand next in order on the north side of the building. He displays an assortment of Flowering and ornamental Foliage plants in three inch pots. The following are the most interesting varieties in this group : collection of Coleus, of Fuchsias, Geraniums, California Ferns, Mimulus, Variegated Foliage plants, Double Petunias, Begonias, Achyranthes ; also specimens of the California Pitcher plant, etc.

Opposite, in the centre, is the table for the display of Cut-flowers, which is principally

occupied by Meyer & Co., for a general assortment of them. The flowers as well as the arrangements are very good.

At the east end, a magnificent specimen of Pampas-grass is quite a feature ; it was contributed by Fred. Bibend, an amateur gardener. The half-circle around the east end is made attractive by a valuable collection of rare plants from F. Haeglich, consisting among others of specimens of Halecias, Ligustrum, Ficus, Brachychitons, Corypha Australis, Araucaria Cookii, Gardenia, Stenocarpus Cunninghamii, Corynocarpus laevigatus, Araucaria glauca, and A. Cunninghamii. One of the grand features of the exhibition, is the display of Meyer & Co., upon the long stand along the south side of the Conservatory, which deserves much credit. On the eastern end of their table we find, first;—

A collection of Zonale geraniums comprising about fifteen varieties, and a collection of Tri-color geraniums of some ten varieties.

Next comes a collection of new and rare plants, of which the most pleasing are : Gloxinias, Sanchezias, Eranthemums, Erythrinas, Cissus discolor, Gesnerias, Caladiums, Bambusa gracilis, etc.

A collection of Ferns comprising about 12 varieties.

Next in order comes their display of plants for greenhouse, conservatory and window culture, comprising a general collection of well and favorably known Flowering plants and a number of rare ones, which altogether make it one of the most complete collections.

And finally we come to their exhibit of Fuchsias, amongst which we notice the popular varieties of Swan, Seratifolia, Rose of Castille, Figaro, Monsieur Meil, Duke de Brabant, Globosa, Guiding Star, Apollo, Chas. Gally, Gen. Lee, Pearl of England, Striped Unique, Puritani, Meteor, Fulgens, etc.

Pomologigal Department.

The display in this department is rather meagre at this time, the only collection being contributed by R. B. Woodward, Esq., from his country residence in Napa Valley. The exhibit is a creditable one, taking into consideration, that the fruit season is not yet at hand, for the display of a general collection. We notice the following varieties:—

Apples—Gloria Mundi, Lawrence, Porter, French Pippin, Flushing, Hawley, Holland Pippin, etc.

Pears—Orange Bergamot, Bartlett, Bonne de Jersey, Beurré d'Anjou, etc.

Grapes, grown under glass—Frontignac Black, Sweet-water, Golden Chasselas, Black Hamburg, White Nice, Frontignac Grizzly, Chasselas de Fontainbleau. The bunches of these Grapes are very full and heavy, weighing from two to four pounds. The berries are unusually large, and as a whole it is a most creditable display.

Mr. Woodward has also forwarded many branches with fruit on, the majority of them being literally covered with the fruit. We counted on one of these branches, about eighteen inches long, seventy good sized ripe Plums.

Some fine specimens of Peaches are also in the collection.

Miscellaneous Articles.

A jar of preserved Cherries from the Nursery of Seth Lewelling, Portland, Oregon. These Cherries, 354 in number and of the Royal Ann variety, were taken from a single branch seven eighths of an inch thick and five feet long, weighing seven pounds.

A case with a fine assortment of fancy Bouquet Paper, exhibited by Meyer & Co.

A collection of Cones of California Conifers, the most conspicuous of which are:—

Pinus Coulteri, P. Jeffryii, P. tuberculata, P. ponderosa, P. muricata, P. Torreyana, P. Lambertiana, P. Sabiniana, P. insignis, Sequoia gigantea, S. sempervirens, Abies Douglassii, Libocedrus decurrens, Picea amabilis, P. grandis, P. nobilis, Cupressus macrocarpa, C. Lawsoniana. This collection was contributed by Dr. C. A. Stivers, and forms an attractive feature of the Fair.

Another selection of Cones is exhibited by Mr. C. L. Kellogg, seedsman; in his col-

lection we found the finest specimens of Pinus Coulteri, and P. Sabiniana we ever saw; also cones of Pinus monophylla, P. tuberculata, P. Benthamiana, and others.

Designs and Plans for rural residences and public squares were exhibited by Frank Staeglich, R. Michelsen and F. A. Miller. They all deserve a good notice.

Messrs. Meyer & Co., the marble men on Market street, have kindly furnished the fine marble fountains, statuary, and the vases, which add much to the general appearance of the Conservatory.

Mr. Gruenhagen and Mr. Eckfeldt display much taste in the erection of elaborate wire summer-houses, seats, stands and tables.

The Floral Display—*Second Week.*

The Exhibition in general, and the Horticultural Department in particular is well patronized, more so than any exhibition previously held in California. During the second Saturday more than 21,000 persons visited the Fair. The grass as well as the plants have kept in remarkably good condition, and, considering the long duration of the exhibition, but few plants have to be replaced.

Although the second week was set apart for the display of Fuchsias, Geraniums and other flowering plants, most of them were entered and delivered during the first week, to which due reference was made in the report of that week.

In the Floral Department the most important additions are the different collections of Cut-flowers.

Mr. Eugene A. Upton, of San Francisco, exhibits several hundred well formed Dahlias, of over forty varieties. Mr. Upton is an amateur gardener, who deserves much credit for his untiring efforts in making the floral display as attractive as possible, While he replaces fading flowers every morning with fresh and more beautiful specimens, his lady devotes much of her time and labor to arranging new floral decorations to enhance the effect; an excellent example for other ladies. This collection of Dahlias is probably the best in the State.

Mr. J. M. Thompson, of Suscol, Napa County, exhibits a splendid assortment of Gladiolus; his valuable collection comprises sixty four well selected and beautiful varieties, all named. It rejoices us to meet such men as Mr. Thompson, who sacrifice time and money to come here and aid us in our efforts to make the floral display a success.

Mr. Reimer exhibits over thirty varieties of Roses, well formed, compact and fine in color; he also exhibits a collection of cut-Pansies, some of which are elegant.

Mr. Wm. Robertson displays a good collection of Dahlias and Roses; the varieties are not very numerous, but the specimens are superior.

Mr. Pechen, of Uncle Sam's Garden, exhibits a collection of good Pansies.

The Pomological Department.

The display of fruit is on the increase. Besides the collection of Mr. Woodward, we have now a very fine exhibit from various contributors of San Joaquin County, and we do not hesitate to pronounce it one of the finest, we have ever seen, although not so full as we should like to see it. The entire display has come to hand under the care of Mr. Geo. West, of Stockton, a gentleman who is always foremost in aiding enterprises of this kind.

We notice in this exhibit in particular, a collection of thirty varieties of Apples by James Crosser, of which we name the following: Porter, Bellflower, Swaar, Mammoth Pippin, Rhode Island Greening, American, Summer Pearmain, Hubbardson, Maiden Blush, Golden Russet, Roxbury Russet, Holland Pippin, Autumn Swaar, Seek-no-further, Ortley, Smoke house, Jonathan, Ladies Sweeting, Rambo, Limbertwig, Vandevere, Spitzenburg, etc.

A collection of Pears by Messrs. P. Young & Nelson, amongst which we notice: Bartletts, Vicar of Winkfield, White Doyenne, Seckel, Flemish Beauty, and others, all of extraordinary appearance and size.

A fine collection of Grapes from West Bro., of Stockton, of over twenty varieties. These are really exquisite. Bunches handsomely

formed; berries unusually large, and color pure and inviting.

A collection of Apples, by Mr. S. Hurrey, very creditable.

A collection of Grapes by Geo. Kidd, an amateur of Stockton; and,

Another collection of Grapes and Figs by Nicolar Eudic, of San Joaquin Valley.

Some thirty pounds of California Grapes, grown on one vine without any irrigation, by G. W. Sweasy, near Marysville

An exhibit of Poha berries and Jelly, from J. M. Alexander, of Haywards.

A collection of California Seedling fruits, by E. W. Garrit, of Placerville, to which we call particular attention; these fruits are well worthy of extensive cultivation.

However, for want of space and time, we must lay over the balance of our report until the next issue, when we shall give a full description of everything omitted or yet to be exhibited in the Horticultural Department.

AWARDS OF PREMIUMS

Of the First Annual Exhibition of the Bay District Horticultural Society.

First Week.

1. Best display and general collection of Flowering Plants in bloom, E. L. Reimer, $20.

2. Best collection of Plants indigenous to Australia, E. L. Reimer, $25.

3. Best collection of Coniferæ, both native and foreign, E. L. Reimer, $20.

4. Best collection of Plants for Greenhouse, Conservatory and Window Culture, Meyer & Co., $15.

5. Best collection of Bedding Plants, E. L. Reimer, $10.

6. Best collection of Hardy Plants with variegated foliage, E. L. Reimer, $10.

7. Best collection of Tropical Plants, R. B. Woodward, $10.

8. Best collection of Climbing Plants, Meyer & Co. $10.

9. Best collection of new and rare Plants, R. B. Woodward, $10.

10. Best collection of Plants suitable for Hanging Baskets and Rockeries, Meyer & Co., diploma.

11. Best collection of Ferns, R. B. Woodward, $5.

12. Best collection of Roses in pots or boxes, E. L. Reimer, $10.

13. Best collection and display of Cut-flowers, Meyer & Co., $10.

14. Pair of best arranged Wire Hanging Baskets, C. Allen & Co., $5.

15. Pair of best arranged Rustic Hanging Baskets, Meyer & Co., $5.

16. Best design for a Suburban Garden, M. Michelsen, $10.

17. Best collection of California Seeds, E. L. Perkins, $10.

18. Best exhibit of California Coniferæ Cones, Dr. C. A. Stivers, $5.

Second Week.

1. Best collection of Fuchsias in pots, not less than fifteen varieties, Meyer & Co., $8.

2. Best collection of six Fuchsias, F. A. Miller, $3.

3. Best collection of Double Geraniums, E. L. Remier, $5.

4. Best collection of Tri-color Geraniums, E. L. Reimer, $5.

5. Best collection of Pansies, Meyer & Co., $3.

6. Best collection of Verbenas, Ferd. Biebend, $3.

7. Best collection of Cut-Dahlias, E. A. Upton, $3.

8. Best collection of ten Dahlias, W. Robertson, $3.

9. Best collection of Gladiolus, J. M. Thompson, $3.

10. Best spikes of Hollyhocks, E. A. Upton, $3.

11. Best 12 Roses, E. L. Reimer, $5.

12. Best 6 Roses, W. Robertson, diploma.

13. Best 12 Pansies cut, E. L. Reimer, $3.

14. Best collection of Annuals, F. A. Miller, $5.

15. Collection of Greenhouse Plants, special premium to W. Robertson, $5.

16. Water Lilies, exhibited by S. B. Simonds, special premium, $5.

17. Best Zonal Geraniums, to Meyer & Co., $5.

18 Best exhibit of Bouquet Paper, to Meyer & Co., diploma.

19. Best six Pansies, to P. Pechen, diploma.

THE FRUITS AND VEGETABLES OF SAN FRANCISCO.

It can be hardly needful here to dilate upon the wonderfully productive influence of the climate and soil of California co-operative with man in the propagation and raising of all those varied, useful and healthful articles of subsistence and enjoyment—fruits and vegetables, as well as flowers. There can be but little fear that the wealth of Nature in this State, in these things, can be much exaggerated. Whether all these astonishingly prolific resources of this region can be justly spoken of in our papers and periodicals, reaching the more distant public in other parts of the world, influencing emigrants to settle here, without giving them the palpable drawbacks, of dryness of climate, overstocked markets, stagnation in general business at this time, centralization of land, and other defects, is another question. But that this State is unsurpassed, if equaled, by any other country in capacity of productiveness and rapidity in the growth of plants and their fructification, there can be but little, if any, doubt. It has been established by unquestionable authority, that the fruit of the Peach can be obtained from the seed in seventeen months; and we have an instance in the present Mechanics' Exhibition, in the Bay District Horticultural Society's department, that the cuttings of Grapes of Hungarian varieties, planted last winter, have produced Grapes weighing about four pounds to each vine.

But what we have now especially to treat on, is our Fruit and Vegetable markets. In taking a walk through them on the 19th of this month, we find abundance of these articles to attract our attention and excite our interest and notice. The first point that strikes us is the immense amount of fruit spread out and piled up in not only the wholesale but the retail marts. The great bulk of the fruit just now consists of Peaches, Pears, Plums, Musk-melons, and Blackberries.

Cherries, Gooseberries, Currants and Figs, have nearly disappeared.

Apricots are getting scarce; what there are, are large. The first that appear in market, similar to the commencement of Peaches and Plums, are small, being inferior in quality, with the exception of the Peaches, which, this season at any rate, were very sweet and juicy, owing, perhaps, a good deal to the unusual coolness of the season.

The third crop of Strawberries, chiefly of the Hovey's Seedling with some British Queen species have appeared, and compared with any lately, in fair abundance, considering that the season for this fruit is becoming late. The first fruit we had this season seemed to possess the best flavor.

The Red Antwerp Raspberry, the general kind, with some Falstaffs, is in moderate quantities. This year has been a far better one than last for this fruit, to be accounted for, no doubt, by the much greater coldness of the temperature.

Musk-melons are plentiful, and there can be hardly any climate that produces sweeter or better, or more luscious.

Water-melons, chiefly the Black Spanish and Ice Rind, are becoming plentiful. This region seems to suit them well also.

The Plums are in plenty, chiefly of the large, yellowish-green, Washington, the Red Horse, large Red Hungarian, Yellow and Red Egg, or Magnum Bonum, George the Fourth, (large yellowish and of fairly good flavor,) and a small Gage, color lightly green, a little like the genuine Green Gage, or Rhein Claud, in taste, but far inferior to that prince of all Plums in rich preserve-like flavor, with remarkable and delightful juiciness. The color of the true Green Gage is dark green, with brown blotches or spots next the sun. We consider that all the Plums, except the Green Gage which we tasted from the Suscol orchard, are comparatively insipid with the Eastern or European fruit of this sort. This remark will apply also to the Peaches here and some other fruits and vegetables, the climate forcing them to too rapid a

growth for a very high flavor, and the hot sun in the valleys diminishing their juiciness.

Pears in the markets are becoming plentiful. Gigantic Bartletts—that generally good and profitable kind in nearly all temperate climes—with large Flemish Beauties, White Doyennes, Beurré d'Anjous, filling the baskets, boxes and stands.

Peaches contend with the Bartletts and other Pears for mastery in the marts, and each keeps down the price of the other. Besides the multitude of other fruits, always in this extraordinary climate showing more or less, at the same time, we notice the old dull red mottled and striped Colombia Peach at one stall. This is more juicy than most Peaches. Clings mostly, have more of this desirable quality than Frees.

Grapes, in much variety, have not yet made their entree. There is a fair abundance of Sweetwater, Black Hamburg, Muscatel, Flaming Tokay, Rose of Peru, and a few others, but they have not yet reached their highest flavor.

We notice on the fruit table of the Horticultural Department of the Mechanics Institute Fair, some Grapes, (of the Black Hamburg we believe) which exhibited fifty pounds at least, from one vine. These were raised on dry ground not irrigated at all. The raiser of these observes, on his label—"California has 100,000 acres that will produce about the same in the same way, if only developed."

By the bye, we notice at the same place some Poha Berries, "esteemed one of the greatest luxuries of the tropics, resembling the Ground Cherry, but as superior to it as the Apple is to the crab. It is unsurpassed by any fruit for richness and delicacy of flavor for pies, jellies, jams, preserves, etc." Here, also, we observe pieces of Plum branches, as nearly as thickly loaded with fruit as they could be placed there by hands.

Red-striped Alexander Apples, brilliant in their yellow and red colors, of enormous size; Bradshaw Apples, of flattish form but of brilliant red and yellow. The Porter Apple as fine and pure in complexion as ever.

Silesian Sugar-beets of large growth; also some very fine Turnip-radishes, seedlings raised by F. A. Miller, color, a fine pink.

The Blackberries in market now come chiefly from the Santa Clara and San Jose valleys—not many from Napa valley.

Nearly all the best vegetables continue to be represented in the markets, and so large that they astonish Europeans and Easterners; but owing to their large growth, not possessing that flavor and sweetness, at least many of them—especially the Cauliflower—which is found in Europe or the more Eastern States.

E. I. Hooper.

WORK FOR SEPTEMBER.

The month of September is usually considered a month of rest, and in colder climates much time is taken up in preparing for the coming winter; fruits and vegetables have to be stored away, where the severe cold cannot reach them; many half-hardy shrubs, trees and vines must either be taken up and preserved under shelter, or protection must be provided for them where they are growing. In the mild climate of California this work is uncalled for; yet our industrious farmers and gardeners always find sufficient work to keep them busy. This is one of the best months in the year for looking after fences, so as to have them in good and durable condition before the rainy season sets in. It is very annoying when you have to repair broken fences during a time when labor is so much needed elsewhere.

The gathering, packing and shipping of fruit takes up much time and labor, and particularly so, where proper care is taken to pack fruit well. We have noticed this year that some Peaches are rolled up in paper, one by one, and arrive here in much better condition than if packed in the usual careless way. Half-ripe fruit may be shipped without such precautions, but what we want here is ripe and healthy fruit, for which a higher price will always be paid. The rolling up of soft fruit in paper is a good idea; it packs the

fruit more solid, and if any of it decays or spoils on the road to market, the damage will be confined to the single package.

The vineyards furnish us now with some good table Grapes, and besides the packing of these, preparations must be made without delay for wine-making. The product of wine will be an unusual large one this year. We are sorry to say that much of our wine is made in a careless way, and many of our vineyard owners have not yet learned the simple but very strict rules for making and keeping wine: cleanliness in everything that is brought in contact with the Grapes and the new wine, is very important.

It is hardly necessary for us to state here, that irrigation should be entirely stopped in the orchard as well as in the vineyard; the young wood must have time to ripen well before the rainy season sets in. The same rule holds good for Ornamental Trees and Shrubs, Raspberries, Currants and other small fruit trees.

In the Vegetable Garden we would advise the planting of Spinach, Lettuce and Endive for winter use. Celery should be earthed up every two weeks. The flower garden had a hard time of it this year. Around the bay the weather was so cold and the winds so heavy, that many of our best flowers were blighted. Annuals, such as Balsams, Asters, etc., did not come into bloom in San Francisco, while Gladiolus, Dahlias and Roses were badly affected by the unusually high winds. This should not discourage any one from raising these flowers. In the East and in Europe there are many other and much severer drawbacks than these things, and yet the efforts there are redoubled every year to bring flowering plants to perfection. The more delicate flowers should be provided with more protection in the way of screens.

As the nights are becoming cooler and the fogs heavier, the plants in the Greehouse and Conservatory require much less water than they have been accustomed to. Overwatering is one of the detrimental practices to greenhouse plants. As a general rule, water should be used very sparingly out of doors as well as in doors during the coming months.

EASTERN *vs.* CALIFORNIA FRUITS.

Under the above heading the *Horticulturist* of New York has the following: "California Horticulturists are very anxious to have some of our Eastern fruit-growers send specimens of their fruit to the Pacific Coast, where it can be placed in fair competition with some of California's best, and the vexed question of quality, amicably settled. It seems natural for every section of the country to claim a special pre-eminence for one or more points in fruit culture.

The Californians have always claimed that their fruit was the finest in size, fairness and productiveness, and no one has disputed their claims; but as Eastern Horticulturists have from time to time visited that coast, they have felt that the claim for quality could not be as well maintained as by the fruit-grower on the Atlantic slope.

The characteristics of Californian fruit, which we gained from careful notice, while we were there last year, were: a sweet pleasant flavor, dryish, mealy texture, freedom from acidity, or but moderate sub-acidity, a lack of juice, spirit, or spicy, aromatic taste. It is very natural for fruit, grown in a dry country, to be less juicy, than that grown in a land of frequent rains, it is hence more sweet, and less distinctive in flavor. Here our fruit has a spirit, aroma and an abundance of juice, which makes the eating of almost any variety perfectly luscious. Nearly every visitor to California will, we believe, confirm these opinions, and if any of our friends could send to California specimens of our Beurré d'Anjou, Seckel, Bartlett or other Pears, to be tested faithfully in comparison with some from Californian orchards, we doubt not, it will be found there is quite a difference in flavor, if not size."

Well said, and exactly to the point. The experience and the quality of the great bulk of California fruit consumed in this market, seem to fully justify the above statement; yet

we are not prepared to accept the above as a final judgment.

California has been pronounced a peculiar land, and the longer we live in it, the more peculiar we find it. So many ridiculous Munchausen stories about the products and productiveness of the Californian soil have been circulated throughout the civilized world, and probably much more throughout the uncivilized portion of it, that we have long since considered it quite unnecessary to contradict or correct them; but the true and real resources of California are not yet understood by our own people, nor are they elsewhere.

For ourselves, we have never considered the low bottom lands of California fit for orchards or vineyards, the soil as well as climate being adverse to the production of a good, juicy, solid and highly flavored fruit; this is particularly the case with Apples and Pears. But we have within our limits land which has produced and will still produce Bartletts, Beurré d'Anjous, and other fine Pears as fine (if not finer) and as large as are grown in any part of the globe. The foothills of Nevada, Placer and other counties are admirably adapted to the Apple and Pear, and the fruit is highly improved if the trees are irrigated two or three times during the dry season. The fruit growing in those counties is consumed there, only a small portion of it finds its way to San Francisco, and therefore its superior quality is very little known. The fruit there ripens a month later, and from our own experience we can say that Nevada County may challenge the world for the flavor, soundness and size of her fruit. We have eaten Apples fresh and juicy, rich in flavor in the July of the following year, while in San Francisco we are not able to purchase an Apple worth the eating after January. Great mistakes have been and still are made in the planting of orchards, and but few are willing to acknowledge their errors. But among these we find Mr. Lewelling. of San Lorenzo; he says that his land is unfit for the cultivation of Apples and Pears, but his Cherries are very superior. He roots out his Apple and Pear trees gradually, and replaces them with Cherry trees. When the Horticultural tourists from the East were sojourning in California, they had the misfortune to be led astray to some extent, in their visiting of orchards which were close at hand and easily reached from San Francisco. The Pomologists who come here from the East, are unwilling to encounter the inconvenience and the toil of visiting those out-of-the-way places among the foothills of the Sierras, very little being known of them, and the imbrovements are not so extensive as they are around the Bay of San Francisco. Yet the time will come when these foothills will furnish the markets of this coast with Apples and Pears equal to any produced on the face of the earth.

Again, as we have said before, Alameda County furnishes fine and beautiful Cherries, another locality is adapted to the production of excellent Peaches and Plums, while still another supplies superior table Grapes.

Our opinion is, that we can produce as good fruit of almost every variety as can be grown anywhere else, if we cultivate it in the proper locality, and subject it to proper treatment. We are convinced that irrigation improves almost all kinds of fruit, but the water must be given judiciously, *i.e.*, at the proper time and not too often.

Having in our different localities the climate and soil adapted to the various kinds of fruit, and Nature assisting by the rapid development of trees and vines so as to produce early and remunerative crops, and the various drawbacks of disease and insects being almost unknown, we think that California occupies an advantageous position in this particular field of industry. But unfortunately many of our fruit-growers do not willingly admit the errors they have committed in the selection of many localities, while others are endeavoring to make us believe that they can grow Bananas, Oranges and Winter Apples, within twenty-five feet of each other. Who ever heard of such absurdity! Let all these fancy ideas be banished, and let us inaugurate a system which shall be based on facts and on Nature's laws, and the success we shall acquire will be a permanent one.

EDITOR:
C. A. STIVERS, M. D.
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F. A. MILLER, C. STEPHENS.

Editorial Portfolio.

Experimental culture is always a necessary feature in the development of a new country, especially so, as upon it in a great measure must depend its capabilities for supporting a continually increasing population. The introduction of the different varieties of grains, fruits, etc., is a part of the agriculturist's duty, and one which he owes both to himself and to the State in which he is to make his future home. While this is incumbent upon him, it is not the mere introduction and planting of exotic vegetation which will answer the purpose; he must ascertain the true value that can be attached to each new introduction. If he does not investigate in this direction, his labors are but necessarily of little worth, and his experiments of corresponding low value.

A plant may grow in its new home with all the outward appearance of success, and yet lack the very essential part that makes it of use. In plant-life, as in many other things in nature, there seems to be a law of natural selection, which cannot be violated at the will of man. Take as an example, two fields of Poppies, one grown in California and the other in India; to the outward eye they are similar in every respect, well developed, and in each case growing luxuriantly. But it is not for the plant that the Poppy is cultivated, it is for a certain material called Opium, and the value of this opium depends upon the amount of *Morphia* which it contains. Now while the field of Poppies in India yields a large per cent. of morphia, that in California may yield so little of this active principle as to make it of no value. So in the case of Tea and Coffee, the plants may grow vigorously in this State, but after all be deficient in *Thein* and *Caffein*, the very principles which make the plants of value.

This action (the deficiency or excess of the active principle in exotic plants) is already commanding some attention, and deserves still further research; this must be the duty of all intelligent agriculturists.

It has been found that trees partake of different natures when grown in a foreign country, the ashes of the wood having a marked change from that of the same tree grown in its native home. The same is also the case with fibrous plants, the fibre either increasing or decreasing in strength when grown as an exotic plant. It is well known that fruit of all kinds are grown in this State to great perfection as far as size and looks are concerned, but that they often lack the rich flavor of the same varieties grown in other countries. This is no doubt due to the process by which they are adapting themselves to our marked wet and dry seasons, and that when they have become so adapted, they will develop a new and perhaps superior flavor. Time and careful cultivation, with a proper spirit of observation, will alone determine this.

People are apt to jump at conclusions, and so deceive themselves and others, to the great detriment of the State. We are told that all of the various vegetable productions will grow in California, and even more luxuriantly than in their native homes. Such may even be the case, but the farmer should first examine into the nature of the plant, its habit, and the kind of soil which it requires before he enters upon its cultivation on an extended scale. By doing this he saves years of useless labor, and oftentimes the expenditure of large sums of money. In the failures frequently occuring in exotic cultivation, the fault lies not in the country or plant, but in the cultivator, who, ignoring altogether the law of natural selection, thought that mere planting and cultivating was all that was necessary to insure success.

In this article we do not wish to have our readers understand us as in any way speaking against exotic cultivation, or that we think plants outside of their native homes will not do well, but rather that we wish to point out how to make this cultivation a benefit to the culti-

vator, and to the State. There is no doubt but that many plants (and even some which we have mentioned) will produce a greater amount of their active principles when cultivated on this coast, than they do where they are indigenous. We have examples in the Potato, Tomato and in fact in nearly all our vegetables, of a marked improvement by cultivation. Fruit also shows this betterment under the hand of man, though in a somewhat lessened degree. But there is another class of plants which do not seem to show this improvement at all, such as the Poppy, Tea, Coffee and many fibrous plants, which to-day are the same in all respects that they were when first discovered; so far as their active principles are concerned.

The time has gone by when the farmer's labors were confined to merely planting and reaping; he must, if he wishes to succeed in his avocation, know more of the nature of the plants which he cultivates, their requirements and true value.

HARDY BULBS.

We have received "Vick's Illustrated Catalogue of Hardy Bulbs, for 1871." In addition to the list of Bulbs, it has a short and instructive chapter devoted to their management. There is no class of plants better suited to outdoor and house culture than bulbs, and we see no good reason why they should be neglected by our florists, as at present seems to be the case. Even our Horticultural Exhibition shows a paucity in this respect inexplicable. With the exception of a few Amaryllis and Lilies, (which by the way are fine specimens,) the class is entirely unrepresented.

BAY DISTRICT AGRICULTURAL SOCIETY.

This Society has been holding an exhibition, or rather a series of horse-races in the outskirts of this city, during the past week. We cannot say that we are altogether opposed to horse-racing *per se*, but we object to these gambling operations under the name and auspices of an Agricultural Society. It is said that charity covers a multitude of sins, and the managers with this proverb in their minds, devoted the proceeds to the benefit of the Orphan Asylums. We would rather see these institutions deriving funds from a more *reputable* source.

WOODWARD'S GARDENS.

These gardens are well deserving of all the encouragement the public can lavish on them; they are kept in excellent condition, the grass everywhere fresh and verdant, the numerous and varied specimens of Conifers, both native and exotic, are in vigorous growth, and with the very full and well selected collection of deciduous trees and especially rich collection of Acacias, form a most interesting study for the arbori-culturist. The shrubs and smaller plants are also well deserving attention; many very judicious improvements have recently been made in the arrangement and decoration of the grounds.

In the Conservatory and Tropical Houses, etc., we were delighted with the display of Coleus and other foliage plants in full leaf; the Caladiums and Begonias were particularly interesting, and we were pleased with the many and fine specimens of *Abutilon Thompsonii*, the delicate pencillings of the leaves are particularly beautiful. Another source of pleasure to us was the numerous, varied and extremely interesting collection of Orchidaceous plants, some of which are in flower; we noted that a fine specimen of *Espiritu Sancto* (Holy Ghost flower) has thrown up a vigorous stem and will shortly exhibit its highly interesting blossoms; we are anticipating, also, the opening of a bud on one of the *Cereus grandiflora* (Night-blooming Cereus.) How many thousands of people have heard of this magnificent flower! how very few have ever seen it! here will shortly be an opportunity. Overdraping the Orchids is a fine specimen of *Stephanotus* in full bloom, with its large trusses of pure white and de-

liciously perfumed flowers. We noted many other interesting plants, as the *Cycas revoluta, Pandanus utilis, Aralia Sieboldii, Corypha Australis;* in fact the Hot-houses and Conservatories appear as full of choice plants as ever, notwithstanding the very large and public-spirited contributions of Mr. Woodward to the Horticultural Department of the present Mechanics' Exhibition, where his fine tropical plants, his superb collection of variegated plants, of tender nature, and his general exhibit of new, rare, choice and beautiful plants, have won general admiration and contributed largely to the success of the Exhibition.

The Vine Department presents many choice varieties of Grapes now rapidly ripening.

Mr. Schuman, lately the efficient chief of these gardens, having left for Europe in the interest of Mr. Woodward, the Horticultural aud Floral Department is evidently prospering under the able supervision and management of his successor, Mr. Brown, from whom visitors will doubtless receive every courteous attention and information.

APPLE TREE PEST.

Several of our exchanges say that the orchards are seriously injured by the wooly aphis, insects which are easily detected, when in masses upon the branches or roots of the trees, by their whitish color.

The *Pacific Rural Press* recommends, as the best remedy, a solution of two quarts of whale-oil soap and two pounds of common potash, in a barrel of water; this should be applied with a soft brush fastened on a handle four feet in length.

We know from careful observation that very little mischief is done by these insects wherever the orchard-grounds are kept under a high state of cultivation. Every one will admit that the suffering of weeds to grow, and allowing the soil to lie undisturbed for years, affords a good protection to all kinds of dangerous insects, and that the frequent stirring of the soil is not only highly beneficial to the growth of trees, but also very detrimental to all kinds of vermin.

Fruit trees should receive as much if not more attention than any other part of the stock of the farm, if we expect a fair yield and good quality of fruit.

The *California Farmer* attributes the production of so much inferior fruit entirely to the want of attention and proper cultivation.

He says, very judiciously: "No one who observes the orchards and fruit trees of our gardens, notes the many that are so sadly neglected, need wonder at the quantity of small and inferior fruit that often gluts the market."

It seems surprising that our fruit-growers will 'kill the goose, that lays the golden egg.' This, in reality they do, when they neglect to prune and properly care for the trees, that are to bring them in the gold. The true reason of the miserably small fruit that fills our market, is the neglect of the trees.

Small and inferior fruit is certainly the result of neglect on the part of the cultivator, unless the reason is very unfavorable, and all the drawbacks above alluded to may, to a great extent, be removed by judicious prunning, thorough cultivation, mulching and thinning out of fruit.

THE LITTLE CORPORAL.

This juvenile, for August, has an enticing table of contents. Stories from Mrs. E. D. Kendall, Susan Coolidge, Lucia Chase Bell, and others. The second installment of "Summer Days at Kirkwood," by the editor, Mrs. Emily Huntington Miller. Art, Science, and Natural History, put into fascinating dress by the pens of Martha Powell Davis, David Rice, M. D., and Olive Thorne, and some very charming poems from George Cooper, Ellen Porter Champion, and Mrs. M. B. C. Slade. This number has several fine illustrations, which now form an attractive feature of this popular juvenile. Terms, $1.50 a year. John E. Miller, Publisher Chicago.

NEW AND RARE PLANTS.

A NEW TUBEROSE.—Some years since one of our most observing florists noticed among his Tuberoses one that produced much larger flowers than the rest, and at the same time was of low growth. This particular bulb was saved and quietly propagated from, until quite a stock was accumulated, which he sold at a round price to two of our florists. We are not informed when this novelty will be offered for sale, but florists and amateurs will be glad to know, that there is in store for them a Tuberose which grows only about eighteen inches high, and produces flowers of double the size of the ordinary kind. This variety will be a favorite with those who force Tuberoses for cut-flowers, as the long stems of the common kinds are always troublesome.—*American Agriculturist.*

Our California Lilies.

Some of the finest Lilies we have ever seen in flower are growing wild in California, and yet they are as much novelties in our gardens as those plants which can only be imported from Europe or elsewhere at a large expense. All kinds of names have been given to them, and we are satisfied that some of them are yet entirely unknown to florists. We do not profess to know how many varieties are growing within the borders of California, but "one of ours" has met with six distinct and interesting varieties :

The *Lilium Washingtonii*, which is scattered over the higher regions of the Sierra Nevadas, is probably one of the finest; it is of a pure waxy-white, and its appearance rather graceful. The petals are slightly recurved and the flowers are four inches in diameter and from five to six inches in length. The petals are tinged toward the center, with fine dots of chocolate-color, which change to a purple-satin-color when the flower is older, and about to decay. Stamens and pistils are of a sulphur-yellow. The flower-stock grows from five to six feet in height and bears from twelve to twenty flowers. The foliage is of a dark green, stands in a whorl around the stem, and keeps green for a long while after the flowers have decayed.

The bulb consists of pure white scales, which are arranged rather loosely, and consequently, are very apt to decay if exposed to wet or air for any length of time. They grow in dry situations and in the midst of almost impenetrable chaparral.

This Lily should form one of the chief ornaments of our gardens; its delightful fragrance may be noticed to a great distance, and is much more agreeable than the perfume of the *Lilium auratum.*

Lilium giganteum, by some called *Lilium superbum*, which we believe is erroneous.

This Lily is found in the meadows of the highest mountain valleys, and seems to be of easy growth. The flower has an orange-yellow ground, the petals are much recurved and give it a very graceful appearance; they are of a bright red color toward the end, and dotted with large dark-brown specks. The stamens which are of a light greenish-yellow, project some three to four inches; The pollen is of an orange-brown. The stock and foliage are very similar to that of the *L. Washingtonii*, and they also keep green for a long time after flowering. The bulb is sometimes yellow, at other times pink, and at times of both colors; it is smaller and the scales are also smaller and are easily broken off; this plant is of a more creeping habit. We have seen this Lily in bloom when heavy frost was visiting the valleys near the summit.

In our next we shall give a description of the remaining varieties.

Double-Flowering Lilium Auratum.

Mr. Hudson, an amatuer gardener, has exhibited in our Horticultural Fair a double-flowering *L. Auratum*, which is certainly a novelty in our experience. When the first flower opened, we confess our idea was that the thing was merely accidental and that perhaps two flowers had found their way into one ; but we were surprised to see that other flowers opened as double as the first. The stock is not as robust in growth as the single

well known varieties, but the flowers are more graceful and far superior in elegance.

Mr. Hudson received this bulb in a lot of the common variety, and feels very proud of this specimen.

A Striped Pelargonium.

Messrs. Meyer & Co. exhibit, in the Horticultural Fair, a Pelargonium, the petals of which are well marked with broad stripes of a pure white, on a rosy-pink ground; it has been raised by Mr. Herring from seed, and has proved true to its present color for over a year. The plant is covered with flowers, and every flower is a perfect representative of its character.

Correspondence.

EMMATON, Sherman Island,
July 31st, 1871.

Editor Horticulturist: Press of work has delayed my writing you my regular contribution.

THE GRAIN CROP UPON THIS ISLAND.

The barley crop is about all of it harvested, and the yield has varied in various parts of the Island according to the threshing; the largest return has been 75 bushels to the acre, but in the footing up the general average has been 60 bushels, all of it of prime quality. Barley seems to do well upon this land. About 125,000 sacks of different kinds of grain will be the yield of this season.

Oats.—But little has been done in this cereal this season, but where land was sown it has yielded good results. The Norway variety seems to do well when put in, in December. The field near my house, volunteer, averaged 80 bushels to the acre, and when we take into consideration the value of this grain, it pays the farmer well. The average height throughout the field was about seven feet. This cereal ought to be more generally cultivated for the market, the only drawback has been its scarcity of seed.

The Wheat Crop.—A very large breadth of land was cultivated with wheat, more than of any other cereal, and taking a general view of the season the yield has been good; the best fields have not as yet been threshed, but the coming month will put a large amount of this staple into the market. There were probably 6,000 acres grown this season upon this Island. One field of 80 acres has been threshed, and the average of it was 60 bushels to the acre, one portion of the field cleaned up 75 to the acre. I am of opinion that the clean up of the harvesting will be 45 bushels to the acre taking the early with the late sowing throughout the Island.

Much difficulty has been experienced this season in gathering the grain, on account of the cracking of the surface of the land in many places, particularly in the middle or backlands; this in my opinion is attributable to their being so far from the river. As the soil gets parched it seems to contract and separate, which makes it difficult and expensive to gather the crops, as it cannot be either reaped or hauled by horse-power. The grain that grows upon this ground is very heavy, and the harvesting is consequently slow and tedious. One field of 600 acres is now being harvested by Chinamen at so much per acre, five to seven dollars according to the circumstances; there are now 47 at work on this field. In gathering grain by this method, hardly a single head is lost, the work is all done by or with the sickle of John Chinaman, who thus comes in to do our harvesting. Their mode of cutting is to step off an acre of ground and three men cut it together, through the field.

As time rolls on this difficulty will be remedied, men will begin to understand the cultivation of tule lands, ditches will be cut from the river and from the sloughs running through the land, and water in abundance will be let on as required; by this means the ground will expand, and this difficulty will no longer be experienced by the tillers of the soil. I have seen this tested, and I am satisfied that it is our only course to pursue.

At the present time much interest is being taken in regard to reclaimed lands, and we ought to be very careful and not too hasty

in estimating their value. This cannot be done immediately, time is required, a great expense is involved, not one or two, but four or five years of study, observation and experience are necessary to arrive at a just estimate of its value. There probably is not any richer land to be found in this State than our reclaimed land will prove to be in the future; at present we know nothing of its capacity for growing.

Staples that have never been grown to advantage will come in as a standard crop. I see (by one of the daily papers, the *Alta*, I believe) that New Zealand Flax is being introduced into this State. In my opinion that is just what may be cultivated on this land to perfection, and I hope that some action will be taken, that we may obtain a good supply of the seed for the coming season, so as to put it to the test. Other flax grows well here.

In conclusion: we are getting along very well, the town is improving, in a short time the hotel will be completed, so that any who desire to come and see us, can do so without any inconvenience. Potatoes are plentiful, and some are getting their grain land ready for a crop of Hay, so that rush is the order of the day upon this place all the year round. Every one appears cheerful, and the store is doing a thriving business. The boats stop daily at our wharf, and our population is on the increase; the school is well attended, and all the machinery of farming is running smoothly.

D. L. Perkins.

Washington, July 26th, 1871.

Editor Horticulturist: The weather this summer has been fine, generally; no severe drought, and not too much rain, so that most crops in the Potomac region are a fair average. Fruits generally good, and garden vegetables fine and in great abundance.

The "Potomac Fruit Society," which meets monthly, is comparatively an old institution and flourishing.

As its last proceedings developed some facts and ideas, which may be useful to your readers, I herein give you a synopsis of their proceedings, at the July meeting.

The Potomac Fruit Growers' Association met at 11 o'clock on Tuesday, 11th inst., at the Board of Trade rooms, Judge Gray presiding; P. H. Folsom, Esq., secretary.

After disposing of routine business, one of our most extensive and popular florists, Mr. Saul, laid on the table some beautiful blossoms of the "Golden Japan Lily." They were much admired, especially for their fragrance, and the thanks of the association were tendered o Mr. Saul for his exhibition.

Next the Blackberry and Raspberry were discussed.

Mr. Saul, in the course of his remarks, said: —The "Lawton" is the finest variety that was brought prominently into notice, and many still prefer it to the "Kittatinny," or any others; but in my experience, I prefer the Kittatinny. I think it ripens more uniformly. The "Wilson" is a very excellent fruit, and is the earliest. The Kittatinny and Missouri Mammoth follow in time of ripening.

Mr. Phillips.—Which of all others is the most desirable berry for market?

Mr. Saul.—If I were going into the Blackberry culture I would not confine myself to any one, but would raise the Wilson, Kittatinny, and Missouri Mammoth. There is none that is superior to all others.

Colonel Chamberlain.—In my neighborhood there are wild berries as large as any of these exhibited here, and very sweet.

Mr. Saunders.—Regarding the varieties of the Blackberry, I found in going through one meadow in Maryland four distinct varieties; if anything, more distinct than any of those now in cultivation, and equally as good. It is wrong to confine ourselves to one variety. Persons have different tastes; then, too, they ripen at different times; and again, one might prove a failure. They do not do well in rich soil; the vines grow so luxuriantly that the wood does not ripen. In one case where they grew in the sod large crops were gathered. One gentleman planted in rich soil 48 Lawtons, training up two canes to a stake, the

next year he had twelve bushels of fruit, but after that he did not obtain good crops. We have a great deal to contend with from unripened wood.

Prof. Howland.—Two years ago last spring I went out into the woods, and from different localities got some black Raspberry bushes. I set out three rows in my garden, and when they came into bearing found a number of varieties, some of them being very fine, like the everbearing, while others were worthless. Altogether, at one picking, I obtained over three bushels from the three rows, 109 feet long.

Mr. Saul.—The black Raspberry will bring only half the price of the red. The latter is bought up immediately in the market.

Prof. Wm. Saunders then asked :—Will Mr. Saul state which of the red Raspberries he considers the best ?

Mr. Saul.—I have found the "Philadelphia" to be a very good, hardy Raspberry. The "Elm City" also is a good variety.

Mr. Saunders.—It is well for us to keep in view the difference between the foreign and our native Raspberry. The foreign is very superior to the native, but as you come south the weather is too dry and the sun is too warm for that plant. We can guard against the mildew by mulching; and by laying down and covering them up, protect them from the frost. The Philadelphia is a seedling of the native Raspberry, and is therefore adapted to our climate. In some places on the Hudson the "Red Antwerp" is a very successful crop, but plants brought south have proved failures.

Mr. Saul.—I have known of its being successfully grown on the Hudson, but I can get no friut from the same vines in this locality.

Friend Gillingham then read a good paper in regard to the *deterioration* of varieties of Fruit, maintaining that they do *not* "run out."

Mr. Saunders.—The old idea about the deterioration of varieties has been exploded. No ordinary cultivator ever entertained the idea. We have everything to show that there is no such deterioration of fruits.

Mr. Phillips.—Is there any Apple which can be grown in this neighborhood to compare with our Northern fruits ! At the North they are stored in cellars, where they keep perfectly until spring, but I think there is none such here.

Friend Gillingham.—Yes, sir, many of them; the Winesap, Albemarle or Newtown Pippin, Abram, Pryor's Red, Limber Twig, and Cannan's Pearmain are all good, and there are others. I am satisfied we can have as fine a list of Apples here as anywhere.

Mr. Saunders.—They have an idea in Western New York that that is the only region for raising fine winter fruit; but that is a mistake. I should say that the hills of Virginia and North Carolina, is the best region in the world. In the future southern fruits will be taken North for cultivation. The great trouble has been the planting of northern varieties in the South; but southern pomologists have of late been paying attention to southern seedlings, and now they have a list superior to the northern list. Some day the North will be astonished at the show of southern fruits.

Mr. Saul.—My opinion is the same. With northern varieties at the South, failure is certain. One gentleman said to me, "of 1,000 trees, I would plant 999 Baldwins;" but I would set out the same number that were not Baldwins. We must get southern varieties. They will do better at the North than northern varieties will at the South. They have found that to be the case.

Mr. Phillips.—If better Apples can be grown in the South than at the North, why is it that we are dependent upon the North entirely for winter Apples?

Mr. Saunders.—For the same reason that we had no California wine until long after it was known that it could be produced there. Hitherto the people have not taken hold of it, but a change is taking place. I know of a shipment of 2,500 barrels from Alexandria to the North; $4,500 has been given for the product of a single Fredericksburg orchard, and thousands of bushels of dried Apples have been shipped North from Raleigh. The

coming pomological exhibition at Richmond will astonish everybody who supposes that the South have no fruits.

Judge Gray.—Is this immediate locality an Apple-growing region? Would you advise a man on the Potomac to plant Apple trees as well as those who live back on the hills?

Mr. Saul.—Yes; particular varieties. Apples can be successfully grown.

The following is a partial list of Apples recommended by Mr. Saunders for cultivation in this latitude: Nickajack, Abram, Albemarle Pippin, Winesap, Cullasaga, Limbertwig, Milam, Schockley, Mattamuskeet, Hall's Early, Golden Wilding, Pryor's Red, Cannan Pearmain, Smith's Cider, Borum, Halliday's Seedling, Brooke's Pippin.

After some further debate, on call of the President, Col. Curtiss delivered an interesting address upon the efficiency of association.

D. S. C.

Editorial Gleanings.

So rapid has been the growth of the unexampled crops on Sherman Island, that the farmers are making haste to clear their grounds in order to prepare them for the reception of potatoes, which they feel confident will mature before the close of the fall.

The Marysville *Appeal* of the 10th instant says: "The Walker Bros., on the Honcut, have nearly completed heading. They will begin threshing in a few days. These enterprising ranchers will probably harvest about seventeen thousand bushels of grain this season, thirteen thousand of which is wheat of an excellent quality."

The Visalia *Delta* of the 9th is informed by a gentleman engaged in the threshing business, that the wheat and barley crop in that county will average better, both in quantity and quality, than last year. Much grain is wasting for want of machinery to gather and clean it; and for the same cause farmers have cut many promising fields for hay, resting safe on the high price of that commodity.

The Chico *Enterprise*, of the 8th, says the work in the grain fields is now in full blast. The farmers have ceased all complaint, and realize the fact, that instead of being cut short, as has been the case in many localities throughout the State, they will have a more abundant yield than that of any previous year.

The wine merchants and grape growers of California calculate that the crop this year will equal the large one of 1869, and that about 7,000,000 gallons of wine will be manufactured the present season. Shipments to the East this year, so far, have been nearly double what they were last year.

The Snelling (Merced Co.) *Argus* has been handed a letter written by J. W. Strong, in which he stated that plenty of cotton blooms were to be seen in his field, and that the crop was growing with a degree of rapidity unprecedented. Mr. Strong is in good spirits and sanguine of the success of his enterprise. He looks upon the successful cultivation of his crop this year as the beginning of an enterprise that will prove of vast interest to the people of California.

The Bakersfield (Kern Co.) *Courier* of the 1st instant says: "We were shown, one day during the past week, a sheaf of wheat composed of three varieties, grown in the Barnes' settlement, equal to any ever produced in the early days of California in the most favored localities of the coast counties while the soil was yet virgin. We were assured that it comprised only average specimens of the products of fields not irrigated."

D. M. Reeves, a farmer near Chico, has cut and harvested 10,000 bushels of wheat this week. He says the club wheat always exceeds expectation, while other kinds never reach them. His fields will more than reach their large yield of other years.

The Visalia *Delta* has seen samples of Hungarian grass in that vicinity three feet high with heads like grain, and which will yield three tons of hay to the acre.

THE

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BEGONIA.

The Begonias are a class of plants which are deserving of most extensive cultivation in our conservatories, our green-houses and in our parlor windows; in our opinion, also, they should be cultivated as bedding plants, although for this purpose, San Francisco may not be very well adapted on account of its prevailing heavy winds, which the tender leaves and brittle stems of the Bogonia cannot withstand. But there are many sufficiently well protected places around some of our city residences, where they could be successfully grown in groups, and where they would flower almost all the year round.

We can advance many good reasons, why we so earnestly advocate the cultivation of the Begonias:

First: They are easily cultivated, and are satisfied with almost any kind of soil, if not too sandy.

Second: The foliage of all the varieties is an ornament in itself, and in some of them it is very peculiarly marked and elegant.

Third: Many of the varieties are almost constantly in flower, the forms of which are very graceful and the colors in some extremely bright and vivid, and in others most delicate.

The Begonias are mostly natives of Brazil and the East Indies, but some of the finest new varieties have been produced by the art of hybridizing. There are now probably over three hundred varieties cultivated in Europe, and the florists of Germany and Belgium are constantly making new and startling additions to them.

In California we are cultivating some thirty varieties, most of which are excellent selections.

The chief conditions necessary to the successful culture of the Begonias are: *plenty of light*, comparatively *small pots* (large pots fostering too much foliage and young shoots), a moderate amount of moisture, with good drainage and a warm but not hot atmosphere; although such varieties as are cultivated for the beauty of their foliage, require more warmth than those which are raised more especially for their flowers.

The propagation of Begonias is simple and easy. Cuttings strike root very readily if placed close under glass; in from two to three weeks they have sufficiently rooted to be transplanted into small pots. The transplanting must be done carefully, as the young roots are very tender and brittle, and the soil for that purpose should be rather light.

They may be raised from seeds, but florists in sowing seeds have more in view the production of new varieties, than the propagation of old ones. Some few varieties are bulbous rooted, and sometimes produce little bulbs at the base of the leaves, which will take root readily if transplanted into sandy soil.

The *Begonia rex*, and others belonging to that class of Begonias, are propagated by placing a leaf taken from the plant, on the surface of a pot filled with propagating soil, in such a manner that almost all the under part of the leaf will touch the soil; in case the leaf is too large, it may be divided into several pieces; these should be held on to the surface of the soil by small wooden pegs or hooks; roots will soon be formed at the different veins of the leaves. It is rather important to cover the leaf cuttings with glass until rooted. The propagation in this manner is generally very successful; many young plants may thus be obtained from a single leaf.

Most of the varieties cultivated in California, may be obtained of our florists at a reasonable rate, the best of them are the following:—

Begonia fuchsioides rubra, which we have seen growing to a height of fifteen feet in conservatories, and covering the wall to a width of five or six feet, presenting one mass of beautiful red flowers of a globular form, hanging most gracefully in clusters from the newly formed branches. This is one of the most easily cultivated varieties.

Begonia parvifolia is one of the very best; its foliage is certainly most beautiful, and its pure white flowers exquisite. This variety grows bushy and compact, and gives an abundance of blossoms at all seasons of the year. There is no plant which will give more general satisfaction as a house-plant than this Begonia. Like the most of its family, its treatment is very simple.

Begonia nitida (sometimes called *B. alba*), is one of the old varieties, and generally considered common; yet we do not consider it so. It should have a place in every collection. The flowers are white and of large size. The foliage is upright in growth, and of a very vivid green. The young shoots come from the root, and should not be allowed to grow more than twelve inches high. By cutting them back frequently new ones are continually formed, and the plant will thus grow bushy. It flowers constantly.

Begonia fuchsioides alba is similar in habit to the *B. fuchsioides rubra*, but in our opinion less desirable. It does not flower very freely with us.

Begonia Sandersonia is another good variety. The long wisps of large rose-colored flowers are very showy, and bloom throughout the whole year.

Begonia Verschaffelti bears large pink flowers during the spring of the year only. Its foliage is very ornamental.

Begonia hybrida multiflora is one of the best. Its flowers are small and heart-shaped, and of a lively red color. It is a continuous bloomer.

Begonia semperflorens, very much resembling the former, except the flowers, which are larger.

Begonia maculata is celebrated more on account of its leaves, which are elegantly marked with white spots, and are somewhat peculiar in shape. It is a very desirable variety.

The following varieties are, like the *B. maculata*, cultivated for their foliage, which is very peculiarly and effectively marked. They require a warmer temperature than those which are cultivated for their flowers, and should be grown close under glass. Care should be taken not to water the leaves, as it will cause them to decay. They have been produced by hybridizing, and their first appearance created quite a sensation:—*Begonia Rex*, *B. Mrs. Stewart*, *B. La Favorite*, *B. Silver Chain*, and *B. Queen Victoria*.

In thus treating of this beautiful class of flowering green-house plants, we hope we shall encourage some of our readers to essay their extensive cultivation; we feel assured it will not be regretted by those who will give them a trial.

The Age of Trees.—It is wonderful to contemplate, in the light of demonstrated science, that the Big Tree groves of Calaveras and Mariposa Counties contain forest giants that were in vigorous growth when our Saviour was born. Professor Agassiz, after an examination of the section of one of the Mariposa trees, recently on exhibition in Boston, expressed the opinion, after counting its well-defined layers, that its age was 1,810 years. He had previously examined a tree which had attained the age of 3,400 years.

ENUMERATION OF SHRUBS AND TREES

Growing in the vicinity of the mouth of San Francisco Bay.

BY PROF. HENRY N. BOLANDER.

[CONCLUSION.]

Linosyris arboreum.

A beautiful little shrub, three to five feet high, with upright branches and long linear leaves, densely set. Branchlets and leaves covered by a resinous exudation. In glades on the northern slopes of Tamal Pais, 1,500 to 2,000 feet elevation.

Grindelia ——?

A low shrub, two to six feef high, bordering the channels in the salt marshes at Oakland and San Rafael.

Baccharis consanguinea D. C.

B. pilularis D. C. *et B. glomeruliflora* Hooker seem to be identical. It is an exceedingly varying shrub; on sandy soil, low, creeping, with numerous fastigiate branchlets, the flowers mostly pistillate, and the heads less crowded; on clayey soil, especially on the banks of creeks, it is often fifteen feet high, quite tree-like, oblong in outline, the flowers mostly staminate, and the heads very much crowded. All forms are subject to excrescences, but especially those growing in a sandy soil. Evergreen.

Bahia artemisiæfolia Less.

Ovate in outline, two to three feet high, evergreen; common on northern slopes, shores of the bay, and Oakland hills.

Artemisia filifolia Torr. WORMWOOD.

Large root-stocks with numerous slender branches, three to four feet high. Occupying almost invariably the southern slopes in common with *Diplacus glutinosus*. Both plants, on account of the leaden color of their leaves and branches, give the southern slopes that barren appearance, contrasting so strongly with the vegetation of the northern slopes.

Artemisia pachystachya D. C.

Sandy soil, three to four feet high. Peninsula of San Francisco.

Vaccinium ovatum Pursh. EVERGREEN HUCKLEBERRY.

A beautiful shrub, five to ten feet high, with slender upright branches; berries delicious. In light sandy soil, on the eastern slopes of Oakland hills.

Arbutus Menziesii Pursh. Madrona.

Evergreen, twenty to thirty feet high, on the northern and eastern slopes of the Oakland hills; but more common and generally larger and finer on the hill sides near San Rafael.

Arctostaphylos tomentosa Dougl. Mansanita.

Low, straggling, evergreen, and gregarious on the out-croppings of white sandstone in the Oakland hills.

Arctostaphylos pungens H. B. K. Mansanita.

Obovate in outline, ten to fifteen feet high; scattered.

Gaultheria Shallon Pursh. MARIS. SALLAL.

Low, creeping, evergreen, covering large tracts of land among the hills of Marin County. Berries eatable.

Azalea occidentalis Torr. and Gray.

On the banks of creeks in Marin County. Quite common; five to twelve feet high.

Diplacus glutinosus Nutt.

Southern and western slopes. Resinous, eight feet high; common.

Sphacele calycina Benth.

Mostly gregarious, five to eight feet high. Near the coast, Marin County; eastern slopes near San Mateo.

Eriodyction Californicum Benth.

Very glutinous, two to four feet high; evergreen. Dry hill sides. Tamal Pais.

Solanum umbelliferum Esch.

A slender evergreen shrub, two to four feet high on the bluffs of the bay.

Fraxinus Oregana Nutt. OREGON ASH.

On the banks of creeks, Marin County; twenty to thirty feet high.

Oreodaphne Californica Nees. SPICE BUSH, MOUNTAIN LAUREL, BALM OF HEAVEN.

Often a large tree in moist localities, forty

to fifty feet high, sometimes three to six feet in diameter; used for ship-building.

Dirca palustris Linn. LEATHERWOOD.

Very common on the eastern slopes of the Oakland hills, where its flowers make it very conspicuous in spring; two to four feet high.

Croton (Hendecandra) procumbens Hook and Arn.

A very low shrub, common on the peninsula of San Francisco, in almost pure sandy soil.

Garrya elliptica Lindl.

Mostly a shrub with slender branches, but sometimes a small-sized tree; evergreen, gregarious, in sandy soil in this city, and on the eastern slope of the Oakland hills.

Platanus racemosa Nutt. SYCAMORE.

Banks of San Leandro Creek, Oakland hills.

Alnus viridis D. C.

A large tree on the banks of creeks, Oakland hills.

Myrica Californica Cham. and Schl. WAX MYRTLE.

Mostly a medium sized tree, in moist localities and on the eastern slopes of Oakland hills.

Juglans rupestris Engelm. Var. *major* Torr. WALNUT.

A beautiful large tree, forty to sixty feet high and two to four feet in diameter, with rather smooth bark and dense, graceful foliage; it may well vie with its Eastern congeners. Banks of Walnut Creek east of the Oakland hills.

Castanea chrysophylla Dougl. CALIFORNIA CHINQUAPIN.

A low, straggling evergreen and gregarious shrub, occurring only on the out-croppings of the white sandstone in the Oakland hills.

Quercus densiflora Hook and Arn. CHESTNUT OAK.

Tamal Pais and Redwoods of Marin County.

Quercus agrifolia Nees. LIVE OAK.

A shrub as well as a large tree; everywhere in moderately moist situations.

Quercus sonomensis Benth. BLACK OAK.

Hill sides, Marin County.

Quercus lobata Nees. WHITE OAK.

Hill sides Marin County and banks of Walnut Creek.

Quercus chrysolepis. DROOPING LIVE OAK.

The most rare of all our oaks. At Belmont, Santa Clara.

Quercus acutidens? Torr. SCRUB OAK.

Evergreen; forming dense chaparral on Tamal Pais.

Corylus rostrata Ait. BEAKED HAZELNUT.

Very common on the eastern slopes of the Oakland hills. A shrub four to six feet high.

Salix (four species). WILLOW.

Wet grounds everywhere, six to twenty feet high.

Populus tremuloides Michx. ASPEN.

A medium sized tree on the banks of Walnut Creek.

Torreya Californica Torr. CALIFORNIA NUTMEG TREE.

A large tree with long spreading branches, and rather smooth bark. Wood valuable; rare, on banks of Papermill Creek, Marin County.

Sequoia sempervirens Endl. REDWOOD.

A very large tree, forming small groves on the northern slopes of hills in Marin County, and on the eastern slopes of the Oakland hills.

Pinus insignis Dougl.

A small tree ten to fifteen feet high, on the outcroppings of white sandstone in the Oakland hills, third ridge eastward; rare.

Pinus muricata Dougl.

A medium sized tree, ovate in outline. Hills of Marin County; rare.

Abies Douglasii Lindl. OREGON PINE.

A very large tree, yielding excellent timber. Grows with S. sempervirens in small groves on the northern slopes of hills, Marin County.

Cupressus Mac-Nabiana? Murray. CEDAR.

A spreading shrub, eight to twelve feet high, on Tamal Pais; rare.

TIMBER TREES.

[Continued from page 302, of last number.]

Pinus larix, (common Larch;) deciduous. On the European Alps, up to seven thousand feet, it attains a height of one hundred feet, sometimes rising even one hundred and sixty feet, and produces a valuable timber of great durability, which is used for land and water buildings, and is much prized for ship building. The bark is used for tanning and dyeing. The tree is of great commercial importance, as yielding the Venitian turpentine, which is obtained by boring holes into the trunk in spring; these fill during the summer, supplying from one-half to three-fourths of a pint of turpentine. In Piedmont, where they tap the tree in different places and allow the liquid to run continually, it is said that from seven to eight pints may be obtained during the year, but the timber suffers by this operation..

[We do not know that any of these trees are growing on this coast, and we cannot understand why this species was not introduced long since. It shows a total indifference on the part of our population, and particularly of our horticultural men, to entirely ignore the cultivation of so important a tree.—Ed.)

Pinus Menziesii and *Pinus Jeffreyii* are natives of California, and have been fully described in some of our former numbers.

[Both of these trees are very rarely cultivated with us.—Ed.]

Pinus Kaempferi, (Chinese Larch)—also called Golden Pine—from China. This is the handsomest of all the Larches. It is of quick growth, and attains a height of one hundred and fifty feet. The leaves, which are of a vivid green during spring and summer, turn to a golden yellow in autumn. The wood is very hard and durable

[We have every reason to believe that this would make an admirable tree for California, both for landscape and timber.—Ed.]

Pinus Lambertiana, (Sugar Pine,) is a native of California, and one of our very best timber trees.

[For miles this tree has been entirely destroyed, and it has been; estimated that within another ten years this magnificent and useful tree will be exterminated from our forests in all localities wherever it can be removed without much difficulty. Yet no effort has been made here to cultivate it and to protect the young trees. We have given a full description of this tree in a former number.—Ed.]

Pinus Laricio, (Corsican Pine,) of Southern Europe, attains a height of one hundred and twenty feet. The wood is white, towards the center dark, very resinous, coarse-grained, elastic and durable, and much esteemed for building, especially for water works. There are three main varieties of this Pine: *P. L. Poiretiana*, of Italy; *P. L. Austriaca*, of Austria; *and P. L. Pallariana*, of the borders of the Black Sea. The tree grows best in calcareous soil, but thrives also in poor, sandy soil where, however, the timber is neither so large nor so good. It yields all the products of *P. Silvestris*, but in greater quantities, being perhaps the most resinous of all Pines.

[This tree may possibly be well adapted for California, and should be introduced. There are a very few cultivated for ornament which do well.—Ed.]

Pinus Mertensiana, (California Hemlock Spruce.)

[Well known here, and described before. —Ed.]

Pinus Pinaster, (Cluster Pine,) a native of the shores of the Meditarranean. The tree is of a quick growth, and rises to sixty feet in height, and the wood is soft and resinous; it yields largely the French turpentine. It is among the best Pines for the consolidation of sandy coast land, and the converting of rolling sands into pasture and agricultural lands; also for ease of rearing and rapidity of growth, it is one of the most important of all Pines.

[This seems to be the very tree adapted for our drifting sand hills which surround San Francisco, and stretch along the coast. We have *so* often argued the importance of arresting the sand drifting into our streets to the annoyance of the inhabitants. Thousands,

even millions of the public money have been recklessly squandered, but not a dollar has been devoted to experiments which might result in saving thousands of dollars now expending for cleaning out drift sands, grading, etc., etc., and not a dollar of it for the comfort of our traveling public! Would it not be well for some one to demonstrate the fact, that our sand hills *can* be covered with vegetation?—Ed.]

Pinus pinea, (Stone Pine,) found frequently in the countries bordering on the Mediterranean. Height of tree sixty feet. The wood is whitish, light, but full of resin, and much used for building, furniture and ships. The seeds are edible, somewhat resembling Almonds, but of a resinous taste, though not disagreeable. They only ripen in their third year. The tree grows as easily and almost as quickly as the Cluster Pine.

[This Pine has been cultivated in our gardens under the name of Italian Stone Pine, and is thriving well. It deserves much more extensive cultivation. While young it is of very pretty appearance, the foliage being of a whitish-green color.

Pinus ponderosa, (Yellow or Pitch Pine) so well known among us that it needs no description.

[It is very little cultivated in our gardens, although it makes a very handsome tree while young.—Ed.]

Pinus radiata, (Pinus Insignis.)

Native of California, is more extensively grown in our gardens and fields than any other Pine. It is easily transplanted and makes a very handsome tree, thriving well in almost any kind of soil and without irrigation after the first year. Being of rapid growth, young forests might be raised within a few years.—Ed.]

Pinus Sabiniana, (California Nut Pine,) is a native of California.

[We cannot recommend this tree for general cultivation, as it does not seem to be available for any useful purpose, except for firewood, and even for that purpose any other wood is preferable.—Ed.]

Pinus silvestris, (Scotch Fir,) a native of Middle and Northern Europe, thriving best in sandy soil; a very valuable tree, fully one hundred feet high, growing to the age of about one hundred and twenty years. The Red Baltic, Norway or Riga deals are obtained from this Pine, as well as a large portion of the European Pine tar. It is well adapted for dry countries.

[This is another tree not cultivated in California, and evidently well adapted for it. It is certainly one of the most useful trees in existence.—Ed.]

Sequoia sempervirens, (California Redwood,) and *Sequoia Wellingtonia*, (California Big Trees.)

[These trees have been frequently described, and they are well known among us. We hope that our Legislature will, before long, pass some good law by which our Redwood forests may not only be protected, but also increased by systematic planting.—Ed.]

Taxodium distichum, (Virginian Swamp or Bald Cypress,) grows in swampy places of North America. A large and valuable tree, four hundred feet high, with a stem circumference of sometimes forty feet; of rapid growth, with deciduous foliage, like that of the Larch and Ginkgo. The wood is fine-grained, hard and durable. It yields an essential oil and a superior kind of turpentine. It is useful for avenues and swampy margins of lakes and river banks.

Taxus baccata, (Irish Yew,) native of Middle and Southern Europe and Asia; at one thousand to four thousand feet elevation. It is generally a shrub, sometimes a tree forty feet high, which furnishes a yellow or brown wood, exceedingly tough, elastic and durable, and much esteemed by turners. The tree is of slow growth, and reaches a great age, perhaps several thousand years; some ancient ones are known with a stem of fifty feet in girth.

[A few of these trees are grown and cultivated as specimen plants, on lawns, etc. We cannot encourage their cultivation for any other purpose than ornament.—Ed.]

Thuja gigantea a native of Northern California and Oregon, (Yellow Cypress,) is a straight graceful tree, two hundred feet high, furnishing a valuable building timber of a pale or light yellow color.

[We think much of this tree for general cultivation. For ornament there is no better. Its graceful form is admired by all. It grows fast with us in almost any soil, and with its good habitus is combined its great utility as a timber-tree.—Ed.]

[To be continued.]

POPULAR BOTANY.

CHAPTER XI.

In taking up the matter of vegetable digestion, we will be unable to do more than glance at the subject in a brief and cursory manner, as it is one of wide range and complicated character.

The first action takes place in the roots, when they absorb the fluid which constitutes the crude sap. This fluid is presented to the spongioles, in the form of a vapor, holding in solution the different inorganic substances which are hereafter to be formed into leaves, bark and wood; or in other words, the organic parts of the plant.

Before this crude sap can undergo digestion and be made available for the purposes of the plant, it must be conveyed to the leaves (which are the organs of digestion) and exposed to the influence of the atmosphere and sunlight. It is under the power of this light that the cells are constructed, and the green matter, or *chlorophyll* produced.

This is well illustrated, by comparing a plant grown in the open air, with one grown in the dark. The first is developed in a vigorous and healthy manner, while the second is almost, if not entirely, destitute of the green color, and having a dwarfish, sickly appearance, and if the deprivation of light is continued, the plant finally dies.

After the crude sap reaches the leaves, (which it does by the means of capillary attraction, passing up from the roots through the trunk and limbs) it undergoes certain changes which are partly mechanical and partly chemical. By the action of the solar light, the unneeded watery portion is evaporated, thus concentrating the sap so as to render its constituent salts more readily acted upon. The next step in the process is a chemical one by which decomposition takes place among those inorganic substances which contain oxygen, thus setting free this gas, and utilizing the remaining portions for the construction of the plant.

The great source from whence plants gather the vast amount of oxygen which they exhale, is the carbonic acid gas which they absorb from the air. Here again we see the mutual dependency of animal and vegetable life. Plants are constantly drawing from the atmosphere this gas, which animal life is as constantly pouring out into it, retaining the carbon for themselves, and yielding up the oxygen to maintain animal life.

After this action in the leaves, whereby the crude sap is converted into actual plant food, it passes to all parts of the plant, forming in its passage, cells, vessels, etc. All of this sap is not used at once in the building up of the plant; a portion being reserved for future use, and stored away in the form of starch, which is to be found either in the roots, stem, or wood, and at times in all three. This starch, before it can be used as food, must be converted into *dextrine* for the purpose of being made soluble in the sap. Gum, mucilage, dextrine and starch are identical in chemical formation with one another, and also with vegetable tissues. They are capable of being converted from one form into another, and reconverted as the plant may require them; carbon, hydrogen and oxygen represent the entire class, and strangely enough in exactly the same proportions, viz: carbon 24, hydrogen 20, oxygen 20.

There is still another class of vegetable products of which nitrogen forms an important part. The principal one of this class is *gluten*, and is to be found in nearly all seeds, more especially in the grains. It constitutes

a large percentage of wheat flour, and gives it that peculiar property of tenacity. The quantity of gluten is increased by giving to the plant a liberal supply of manure containing a large amount of nitrogen. *Legumin* also belongs to this nitrogenized class, and is abundant in peas, beans, etc., from which fact they have derived the name *Leguminosæ*. Plants also produce what is called vegetable albumen and fibrin; thus furnishing the materials for the formation and maintenance of animal life.

The annexed diagram (taken from Gray's Botanic Text-Book) gives at a glance the relations between the three kingdoms, and shows how nature, from the senseless clod and inanimate dust, forms man with his glorious intellect, and God-like form:

Diagram Illustrating the Mutual Relations of the Three Kingdoms of Nature.

I. Simple Vegetation.

Mineral Kingdom.	*Vegetable Kingdom.*	*Animal Kingdom.*	*Mineral Kingdom.*
WATER, . . . Hydrogen, Oxygen,	Oxygen, Hydrogen,	Consumed by animals, and in respiration returned to the air, as	Oxygen, Hydrogen, WATER.
CARBONIC ACID, Carbon, Oxygen, . .	Carbon,		Carbon, Oxygen, CARBONIC ACID.

= Vegetable Tissue, Starch, Sugar, etc.,

II. Nitrogenized Elements.

Mineral Kingdom.	*Vegetable Kingdom.*	*Animal Kingdom.*	*Mineral Kingdom.*
AMMONIA, . . Hydrogen, Nitrogen,	Hydrogen, Nitrogen,	forming Fibrin (Muscle), Gelatin (Sinews), Casein (Curd), etc.,—returned as	Hydrogen, Nitrogen, AMMONIA.
WATER, ... Hydrogen, Oxygen,	Hydrogen, Oxygen,		Hydrogen, Oxygen, WATER.
CARBONIC ACID, Carbon, Oxygen, . .	Carbon,		Carbon, Oxygen, CARBONIC ACID.

—Gluten, Legumin, etc.,

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION XI.

Having selected the grounds for a country residence of third-rate class, it will require some little judgment in locating the house, outbuildings and laying off the approach. In many instances very little uncertainty will exist as to the proper location for the house, etc., yet there are cases where taste, experience and knowledge must be brought into requisition to fix the site of the residence and other important features, such as outbuildings, approaches, entrances, etc.

While the ground occupied by a city residence is supposed to be level, or at least on an easy grade, the surface of a country residence occupying several acres is generally uneven and varied. The residence should be located on elevated grounds, but we do not wish to be understood that it should be built upon the very highest point, where it would be inconvenient and out of place. The entrance should be at the lower portion of the grounds, and the approach to the house should gradually rise through that portion of the foregrounds which is not in direct view of the entrance or the front of the house; but how far distant the house should be located from the entrance, depends upon circumstances. If the vicinity to the entrance is objectionable or unsightly in character, the house should be placed at some distance, but where no objections of this kind exist, it will add much to the comfort and convenience, if the house is located near the entrance to the grounds. On the other hand, it must be admitted that when the house is located at some distance from the gates, and the road of approach is thus lengthened, strangers and visitors will be favorably impressed as to the extent of the grounds.

The house being placed upon an elevated portion of the estate, it is supposed that a good view is obtained over the most attractive portion of the enclosure itself, or over the surrounding country. This view should be had from the principal rooms of the house. But the arrangement should not be such as to take in every point of interest, inasmuch as we expect new sights from other portions of the grounds.

In regards to outhouses, we have very little to say. Their location should be conve-

nient, but not too close to the residence. They should form a separate and distinct feature.

We shall next consider the approach, to which very little attention seems to be given in our new country, and yet we think it one of the most important features within the boundaries of a country residence. The first impression after entering the gates should be a most favorable one to all who have occasion to visit the grounds. The road itself should be made of good material and should be kept in good condition, fit to be traveled by horses and teams. The direction of the road should be curved, and if there are several curves, they should be of uniform character. If the distance between the gate and the house is not great, two curves will be most judicious; but where the distance is long, more curves may be established. These curves should not be accidental, but ought to be the result of natural or artificial interventions. There must be an apparent reason why the road is curved: a group of trees or shrubs, a body of water, a bridge, a hill, or some other object. As we have said before, the inclination of the road of approach should be uniformly ascending from the gate to the house. The road should be built of good material and should be kept clean and smooth; a good covering of gravel adds much to its appearance. The house should not be within sight from the approach except a striking view of it can be obtained at a certain point. The road should be sixteen feet in width. A good effect is produced by providing a return road, but care must be taken to shield one from the other.

The grounds of a third-rate country residence admit of various provisions: a certain space for a kitchen garden (which should be located close to the outbuildings and also conveniently for the occupants of the house), should be set aside, and also a reservation for trees and vines, which may be either located so as to connect the shrubbery with the kitchen garden; or it may be detached entirely from the ornamental grounds, of which we will now speak.

The ornamental grounds, which should occupy the greatest portion of the enclosure, and which should surround the residence on two, or, better, on three sides, may be divided into three parts, namely: the flower garden, the pleasure ground and the portion surrounding the approach; yet we frequently meet with country residences where the flower garden is not treated as a distinct feature, but where groups of flowering plants are distributed throughout the pleasure grounds with very good effect. For our part, we prefer to have a flower garden somewhere near the house, for various and good reasons: flowers require constant attention, they make the immediate surroundings of the house cheerful and pleasant, perfume the air we breathe, and supply new attractions every day.

In connection with the flower garden we like to see a conservatory, although the necessity of glass structures is not so imperative in California, where the mild climate permits the cultivation of the choicest flowers in the open air with perfect success which are elsewhere treated as green-house plants—there are so many desirable plants of the tropics, which we may successfully cultivate here under glass without that constant and close attention which is required in the East and in England, that a conservatory must form a most desirable feature with all who can afford the expense.

The flower garden should be located on the east or south-east side of the house, and the conservatory should be connected with it in such a manner as not to obstruct the view from the principal part of the house. We are not in favor of attaching conservatories to the residence, on this coast, although proximity to the house is desirable.

The grounds through which the approach passes we desire to place on the opposite side from the flower garden, or as near so as possible, *i. e.*, west or south-west of the house. This ground should be backed by dense groups of trees and shrubs.

CARROTS.—Hoe early, and thin to five or six inches in the rows.

FAULTS IN FRUIT CULTURE.

Cultivation of Fruit—Some Faults—Too close Planting—Too large Crops—Thinning Fruit Required—Profits of Different Kinds of Fruit-Raising—Price of Land for the Purpose—Facilities for the Exportation of Fruit.

Although we are aware that the climates—we say climates because there are many—and soils of California, will bear closer planting of all fruit trees and the smaller fruits, and produce a greater amount of fruit and of greatly larger size, than any other country we know of, yet we have no hesitation in stating, that in most of the orchards we have seen, the trees are too closely planted. It is true in the hot valleys, that a certain amount of shade and more than is admissible in the more eastern regions of this continent, is beneficial, and especially to the small fruits planted between the rows of the larger fruits, but we certainly consider that, in general, this crowding of vegetation is carried to too great an excess. Another error among cultivators or orchardists, is, to allow their trees to mature too heavy crops, and so break down the branches; and this is not all the damage done—the trees are weakened, not only for the following crop, but their future stamina is much injured.

Elevated positions will be found very desirable in promoting the flavor and juiciness of fruits; trees thrive and bear well close up to the mountains, and generally better than those cultivated on bottom lands. This is a very important point to the culturists, as such lands are cheaper than the more level locations. This applies more particularly to the vine when planted far up, as it will yield better wine than is made on the plains.

Another fact in fruit culture to be well understood, is, that the raising of the Grape pays better than cultivating orchards of Apricots, Pears, Peaches, Figs, and other fruits except, perhaps, the sweet Cherries, Currants, Strawberries, and Blackberries; although this, of course, will depend much upon the distance from the markets of large cities. Consequently, of late, vineyards are being extended more than orchards.

There can be no doubt, that fruit in general in California, can be produced at much less cost than at the East, for in most cases land can be obtained of good quality, at comparatively very low prices; in the second range of the coast valleys, it can be obtained from five to twenty-five dollars per acre. But as the balance sheet of the orchardist will be the criterion of success, and as prosperity in this, as indeed, in any other occupation depends upon the adaptability and various other business qualities of the individuals who embark therein, as well as in the cost of conveyance and the prices obtained, it is not an easy matter to estimate the actual results of such undertakings. Several things may be named, in addition to what we have said as favorable to cultivators here, compared with the East; one fact is, that the trees grow nearly twice as rapidly as in the East, and come into bearing in less than half the time; another is, that the fruit is larger and handsomer. Still another is, that California fruit is almost entirely exempt from diseases and insects; some more could be named, as for instance, exemption from the decay of fruit on the trees—there being no rain to cause rotting while the fruits are allowed to remain longer on the trees. Also, there is much less annoyance from weeds, and therefore there is not the necessity for so much labor as in the East. Labor at this time is not dearer than with our Eastern fruit men, and Chinese labor is less. Still, our foreign friends must not be deceived into the idea, that the keeping of the ground properly stirred here is unimportant, for we have seen places nearly ruined where this has been neglected for a year. Unless at convenient distances from the great markets, the production of many, perhaps we may say most, of the fruits has been overdone, the prices not justifying their being carried to market. Millions of bushels annually rot on the ground. But the prospect latterly has brightened, for many large cultivators (and these in some instances may include the smaller ones,

as the larger may take the fruits of the smaller at a paying price) have recently sent fruit, chiefly Pears, in the cars to Chicago and New York, at quite remunerative prices. The business is now likely to become better systematized. But there is too much of monopoly and combination for low prices by the dealers (as in other business of this kind) against the growers, and these last have reason to complain, as the salmon catchers do of the fish-mongers in the cities keeping down the price of fish by mutual determination, arrangement, and leaguing together, and the poor fishermen cannot help themselves at all; and so the hucksters or middle-men, get the better of the producers of fruit: these observations are also applicable to the vegetable market. E. J. Hooper.

THE LATE HORTICULTURAL EXHIBITION.

In our last number, we gave our readers a full report of the Horticultural Exhibition during the first two weeks, and which comprised all of the more important features. We have endeavored to be just to all, but it will be admitted by every one, that small mistakes will obtrude themselves where there is so heavy and varied a press of business, and where there is so much to be admired, which is so well deserving of notice. If we have omitted anything which deserved mention, we have not done so intentionally and regret it, and request it may be considered an oversight to some extent excusable, from the fact that we had to give a great deal of our time to business directly connected with the Exhibition.

The third week was devoted to the display of cut-flowers and bouquets of all descriptions in the Floral Department, and to the exhibition of Grapes and Seedling fruits in the Pomological Department.

The display of bouquets did not exactly meet our expectations; although a few exhibitors exerted themselves; the majority of those florists who were able to make a good display, neglected to do so, for reasons best known to them.

Meyer & Co. made the most numerous exhibit, consisting of a basket of flowers, pyramid bouquet, round bouquets, table bouquets, wedding bouquets, funeral wreath and cross, flat bouquet and button hole bouquet.

Mr. W. Robertson came next with a large and fine pyramid bouquet, funeral wreath and cross, wedding bouquet and round bouquets.

Mr. Reimer exhibited a monstrous pyramid bouquet, which was much admired; it was some three feet high, and about two feet in diameter.

Mr. Chiousse placed on exhibition a fine funeral wreath and cross and a wedding bouquet, consisting entirely of Orange blossoms.

The Pomological Department presented a much better appearance than at the beginning of the Fair, but it is to be much regretted that a more general interest was not felt among fruit-growers in this exhibition. It is true, that it is very difficult and expensive, as well as laborious, to keep up a good display during the long period of five weeks; but in this case unfortunately, the burden rested upon a very few, who did all they could to make the exhibition a success. It would have been far more satisfactory, if the display had been made more generally from the various parts of the State, if even by much smaller collections.

West Bros., of Stockton, and R. B. Woodward, of Napa Valley, kept up a continuous display of fine Grapes, Apples, Pears, Plums, Peaches, etc.

E. W. Garritt, of Placerville, also sent in another exhibit of new Seedling Peaches and Pears.

J. M. Patterson, of San Jose, exhibited a splendid collection of fine Plums and Prunes, some of them on branches. Mr. Patterson's Plums are of superior flavor and of unusually good size.

J. Rutter, of Florin, exhibited a very superior lot of Black Hamburg and White Muscat Grapes.

Jacob Long, of Murphy's Ferry, Stanislaus County, showed magnificent samples of Peaches.

Fourth Week.

The last week was set apart for the display of floral decorations and ornamental foliage plants of tender nature.

All the florists began to weaken in their efforts to display, and this was not to be wondered at; to keep up a floral exhibition a month is a rather tiresome and exacting affair, particularly in a warm place, and where a hundred and fifty gas-lights are operating rather severely on the atmosphere. We therefore feel very much inclined to excuse them for having neglected to renew the floral display at the eleventh hour.

The only exhibitors were Meyer & Co., and I. Chiousse.

R. B. Woodward displayed a very choice lot of Ornamental foliage plants, although a larger number of species would have been acceptable and much more appreciated. His Caladiums and Hybrid Begonias reflect much credit upon his gardens.

Miscellaneous Matters and Points of Interest.

A. W. Morris, exhibited quite a curiosity in the shape of a Snail Cucumber, measuring eight feet in length, and averaging two to three inches in diameter.

A. Zabaldano, of the Italian Hospital, exhibited a quantity of California Opium, (the constituent proportion of Morphia in which, being ten per cent.,) accompanied by seeds and incised capsules of *Papaver somniferum*, which show the exudation of the Opium.

Dr. F. Delmont also exhibited a large cake of Opium and the capsules of the Poppy grown near Lower Lake, in California.

Some very elegant Amaryllis were shown by Mr. Biebend and Mr. Kruse.

Mr. Gilmore exhibited a well grown Echeveria in bloom.

Mrs. Bell presented a monster leaf of Caladium, measuring nearly three feet in length and two in width.

AWARDS OF PREMIUMS

Of the First Annual Exhibition of the Bay District Horticultural Society.

[Conclusion.]

Third Week.

1. Best Basket of Flowers, to Meyer & Co., $5.

2. Best Pyramid Bouquet, to E. L. Reimer, $3.

3. Second best Pyramid Bouquet, to W. Robertson, diploma.

4. Best two Round Bouquets, to Meyer & Co., $3.

5. Best Wedding Bouquet, to W. Robertson, $3.

6. Second best Wedding Bouquet, to Meyer & Co., diploma.

7. Best Funeral Wreath and Cross, to Meyer & Co., $5.

8. Second best Funeral Wreath and Cross, to W. Robertson, diploma.

9. Third best Funeral Wreath and Cross, to J. Chiousse, diploma.

10. Best Flat Bouquet, to Meyer & Co., $3.

11. Best Buttonhole Bouquets, to Meyer & Co., diploma.

12. Best collection of Zonale Geraniums, to Meyer & Co., $5.

13. Exhibit of Bouquet Paper, to Meyer & Co., diploma.

14. Best six Pansies, to P. Pechen diploma.

Fourth Week.

1. Best and largest collection of Apples, to J. Crosser, $10.

2. Best twelve varieties of Apples, to R. B. Woodward, $5.

3. Best and largest cultivation of Pears, to R. B. Woodward, $10.

4. Best ten varieties of Pears, San Joaquin Co., diploma.

5. Best ten varieties of Plums, to J. M. Patterson, diploma.

6. Best and largest collection of Grapes, to West Bros., $20.

7. Best ten varieties of Wine Grapes, to N. Eudic, $10.

8. Best six varieties of Table Grapes, to R. B. Woodward, $5.

9. Best exhibit of California Seedling Fruit, to E. W. Garritt, diploma.

10. Best exhibit of Floral Decorations, to Meyer & Co., $10.

11. Best collection of Variegated Foliage Plants of tender nature, to R. B. Woodward, $10.

12. Best exhibit of Sugar Beets, to D. L. Perkins, $5.

13. Best exhibit of Seedling Peaches grown in San Francisco, to Mrs. Bennett, diploma.

14. Display of Fruited Grape Vines, in boxes, to J. Putzer, diploma.

15. Best exhibit of Vegetables, to D. L. Perkins, diploma.

16. Exhibit of California Opium, and Preparations, to A. Zabaldano, diploma.

17. Exhibit of Ramie Plant, to J. S. Finch, diploma.

18. Herbarium, to Mr. Cohn, diploma.

H. N. BOLANDER,
FERD. BIBEND,
H. G. BLOOMER,
CHAS. STEPHENS,
C. A. STIVERS, M. D.
WM. ROBERTSON.
Judges.

WORK FOR OCTOBER.

The suggestions which we have given for September, are to a great extent applicable to the month of October.

While all the later fruits of the orchards and vineyards are ripening, much time of necessity must be devoted to the gathering, packing and shipping of the produce.

From various localities, we are informed, that the fruit is wasting for want of a market. There is no reasonable excuse for this. It shows a sad want of management on the part of the owners of orchards when they do not make good use of their fruits; and it is a most singular fact, that the complaints come from those localities which have the reputation of furnishing the very best samples—the railroad and steamboat lines not being in direct communication with them, no effort is made to open up roads to market or to turn their products to good account. It is a fact, that Apples and Pears grown in close proximity to San Francisco lack taste and flavor, and therefore cannot be readily sold in our fruit markets, but this inferior fruit could be made available if for no other purpose than making vinegar. But when the pomologists of the foothills complain that they have no sale for their fruit, we would advise them to dry a fair portion of it, to make cider of another portion, and to store away the best for use in winter. Dried Apples can always be sold in our markets, in fact we ought to export large quantities. Women and children may assist much in the work of drying fruit. Good cider is a rarity in California, and so much of an inferior article is sold in our market, that consumers have a strong prejudice against that beverage. Let our pomologists go to work and manufacture a good quality of cider, and they will soon establish a fair demand for it. As for the best quality of winter fruit, the producers can not do better than to keep it for winter use, and we can assure them that our fruit dealers will be quite willing to pay the extra freight from more distant points. It must be admitted that the fruit grown in our valleys becomes mealy and stale after being gathered for some time, while the fruit grown in the northern part of the State, and particularly among the foothills, retains its delicious and refreshing qualities for many months after the harvest. This fact, once thoroughly demonstrated to the consumer, will establish an increased demand for the produce of that portion of the State.

In our opinion, it shows bad management on the part of fruit growers, where they lose any of their products.

We like to see abler economy on the part of our farmers, and our pomologists in particular. The fruit business, like any other enterprise, will pay if worked intelligently and systematically, and if individuals in certain districts find the task too difficult, to make fruit growing profitable, let them form clubs in every locality for the purpose of ascertaining the means to make their enterprise remunerative.

The same remarks apply to grape culture, but wine making must be understood, and

besides requires more capital. We cannot consider it sound policy for any man with limited means to go extensively into grape culture, unless he understands the making of wine and has the means to purchase the necessary machinery and to build proper structures for keeping it in good condition.

But we have digressed too far already, our subject being "Work for October," and all the advice we can give is, to turn every pound of fruit to some useful purpose.

In the Vegetable Garden not much can be done, unless there is an abundance of water. Transplanting of young Cabbage, Cauliflower, etc., is useless, unless water can be given in sufficient quantity to produce rapid growth; the same may be said in regard to the sowing of seeds, such as Turnips, Carrots, Ruta Bagas, Lettuce, etc. Seeds which are ripe should be gathered during the warmer part of the day, when the stalks are dry, and stored away in a dry place. Asparagus and Rhubarb beds should not be watered during the latter part of the dry season.

In the Flower Garden we would caution our readers not to water beds where bulbous roots are planted. Irrigation will keep them in a growing state, and unless they have a good season of rest, the flowers in the ensuing spring and summer will be of inferior quality. Save seeds of annuals, when ripe, cut back long shoots of late growth, to produce lateral shoots and to secure a greater abundance of flowers for the future.

Greenhouses and conservatories require less irrigation as the autumn and winter approaches; water should not be given unless the earth is actually dry.

Make cuttings of Geraniums, Verbenas, Petunias, and many other soft-wooded plants, which will make good young stock for spring. Shift the young plants into larger sized pots, when the roots have penetrated the balls of earth. Pinch off the young shoots of your young plants to produce a bushy and symmetrical growth.

Make diligent search for all kinds of insects, and destroy them before they get the best of you.

THE STATE FAIR.

The eighteenth annual State Fair was held at Sacramento, during the week commencing with the 18th, and closing on the 23d of September.

Our reporter was on the ground on Monday, but it was impossible then to form any definite idea, except of the extent of the display. Every one was busy fixing up, and the prospect for a good attendance was encouraging.

The Fair is now over, and as elaborate reports have been published by the most prominent papers, it would be useless to occupy much space in our Magazine except on those departments which were most interesting to Horticulturists, and which received less notice through the various newspapers than they actually deserved.

The Floral Department was a complete success. The room occupied for that purpose was necessarily very limited, and we could not expect a very extensive display, but the small space was ornamented in a very neat and judicious manner, and much credit is due to the managers of the affair.

The grand Ivy Arch at the entrance, the Floral Temple, finished with moss, opposite the entrance and nearly in the center of the conservatory, exhibited much skill; the grass along the borders was well up, and added much to the general good appearance, and, if we take into consideration that only two weeks were occupied in putting up the frame and preparing all this, we must congratulate the designers upon the work so well and efficiently done.

Mr. O'Brien contributed much to the success of this department, and he deserved the appreciation of all visitors to the Fair.

On one side of the Temple, we noticed a magnificent display of Dahlias, from the gardens of Mr. Eugene A. Upton, an amateur and a member of the Bay District Horticultural Society; opposite to this, we noticed a fine lot of flowering plants, contributed by some of the members of the Bay District Horticultural Society.

In the center of the southern wing, a splendid collection of Coleus took many of the visitors by surprise, while the outside borders were occupied by a display of flowering plants from F. A. Miller, of San Francisco, and John O'Brien, of Sacramento.

Near the entrance to the right, E. B. Crocker, Esq., a wealthy amateur of Sacramento, made a good exhibit of some choice green-house plants, amongst which, we noticed in particular, the Strelitzia in bloom, a fine specimen of Crissum Africanum in flower, and other valuable plants.

In the center of the northern wing, a fountain, mounted upon a hill, refreshed the air much with its play of water, although the somewhat yellow color of the water subdued the effect to some extent; however, this was, we suppose, not the fault of the managers, but one of those unavoidable evils, which Sacramento has to contend with.

Around and over the outskirts of this wing, Dr. J. M. Frey made a very creditable display of green-house plants, amongst which were many rare and valuable plants. Although these plants were not in flower, the collection consisted of many choice plants, which after importation from the East, had suffered much.

A table for cut-flowers, was well filled with fresh flowers from San Francisco.

All contributions from San Francisco, were in charge of F. A. Miller, and were entered in his name.

The Pomological Department was a complete success, and was particularly interesting, on account of the extensive and fine display of Eastern fruit.

It is impossible for us to do the different exhibitors justice, as our space is very limited. The appearance of the fruit sent here from our Eastern friends, differed much in appearance from the productions of California, and while many varieties from the East showed a marked superiority in size and appearance to the same varieties grown in California, we must, in justice to ourselves, say, that many of our varieties showed a decided superiority to theirs. Much of the Eastern fruit was green as yet, and unfit for eating, while the same varieties raised in California, were perfectly ripe. As far as the late winter fruit is concerned, we consider the Eastern fruit preferable, because its firmness and unripe state, guaranteed its fitness for long keeping.

From the northern parts of California and the higher foot-hills, fruit could have been sent to the exhibition, which might have shown more similarity to the Eastern fruit, for the reasons which we have frequently given in our Magazine.

As we glanced over the tables filled with Eastern fruit, and again turned our eyes to our California fruit, we, also observed a very remarkable feature in the distinctiveness of the different varieties, which seem to be much more apparent in the Eastern fruit, than in ours.

We also noticed the peculiar polish or metallic lustre of the Eastern fruit; this, however, is due to some extent to our fruit being in a more advanced state of ripeness.

The most important point, however, to be decided is the flavor, and in this respect we had no opportunity to satisfy our curiosity, nor do we know that we shall have that opportunity. In all probability, we shall be compelled to go by the judgment of those who can and will render an honest and impartial verdict.

The display of fruit by Mr. O. B. Shaw, of Sonoma, was one of the best; his Gausel Bergamot, Pound Pears, Duchesse de Angouleme, Beurre Diel, Stevens' Tennessee, Winter Nelis, etc., can not be surpassed.

Of Apples, his Northern Spy, Cayuga Red Streak, Roxbury Russet, Swaar, Gillflower, and Murphy are most superior.

Of Grapes he showed beautiful bunches of the White Hamburg, Malaga Raisin Grape; White Malaga, Black Malaga, Rose of Peru, Rose Chasselas, Black Hamburg, etc.

He exhibited also Japanese Chestnuts, fruit from Lemon and Orange Seedlings, Osage Oranges, Prickly Pears, and other curiosities.

A Mrs. Harrington exhibited probably the choicest samples of Grapes, such as the different Muscats, Tokays, White Nice, Blue Malvoise, Lombardy, Miller's Burgundy, Frankenthal, etc.

The best exhibit of Peaches was made by E. M. Smith, of Coloma. His collection consisted of some forty varieties .He also exhibited some varieties of Grapes, which we have never seen before : White Napoleon, Red Mountain, Purple Damascus; Blue Syrian, and Black Morocco.

On account of illness our special reporter was unable to be in attendance during the entire week of the Fair, and undoubtedly other collections of fruit were added during the latter part of the exhibition, which we cannot notice here.

Silk.—The Silk interest was well represented by our old and esteemed friend Mr. Ed. Muller, of Nevada City. He makes a most complete and interesting exhibit of silk culture, from the egg to the reeled silk. While we see the young worms feeding upon the chopped-up Mulberry leaves, we also notice the worms in a more advanced state, and, finally, spinning the cocoons.

Mr. Muller cultivates the French Annual (White and Yellow,) the Asia Minor, the Monteauban, Rivoltins, (producing two crops a year,) and the Japanese Rivoltins.

He also exhibits three varieties of California Silk Worms, one living upon the California Lilac *(Ceanothus)*, and the other two upon the common Oak. Those living upon the Oak furnish cocoons which can be reeled. He thinks they can be domesticated and made profitable.

Mr. Muller exhibited, also, cocoons from other contributors of Nevada County, which demonstrate the fact, that the people of Nevada County are wide awake to their future interests in the Silk business. These additional contributors are : Charles L. Dimon, of Silk Grove Ranch; W. Loutzenheizer, of Grass Valley; Miss Ruth L. Rolfe, of Nevada City; Horace Hale, of Blue Tent; and Mrs. H. S. Bradley, of Nevada City.

REPORT ON THE FRUIT MARKET.

In passing through our Fruit Market this month, my attention has been particularly attracted by the splendid coloring of many of the fruits exhibited for sale, and also by some beautiful specimens among the parcels exhibited on the tables at the Bay District Horticultural Society, at the Fair. The rich blushes and tints of color in the Apples, Peaches, Pears, and some others of Pomona's gifts, are truly delightful to the eye and tantalizingly promising to the palate. I cannot conceive that there can be any climate which in all gradations can excel California in this respect, nor yield more gratifying results of this kind. This is certainly a very important consideration to attend to in the cultivation of those fruits whose complexions are susceptible of improvement, as it has much to do with their successful sale, and also in improving their flavor. It makes them both rich in appearance, and more luscious to the palate.

The high and glowing colors of fruit are, of course, owing chiefly to the effects of sunlight—the juices being elaborated through the foliage and branches whose character and growth maintain a very important part in nature's processes. It is well known by practical men, that the most brilliant colors and the most valuable fruits are gathered on the exterior limbs, therefore the inside branches should not be allowed to grow very close together in the interior of the tree, and that all water-sprouts, (as they are called) at least, should be carefully cut out, that the sun's rays may penetrate, for some portion of the day at any rate, into the heart or middle of the trees. This, however, must not be pursued to excess, as the drying tendency of this climate would create too much evaporation, and the natural processes of secretion of the juicy particles could not be carried on without sufficient moisture. This mistake would induce quite a contrary effect from the gorgeous coloring so much coveted; and, similar in effect to too much deprivation of sunlight,

would impart a green, pallid, sickly or diseased appearance to the Apple, Peach, or Pear, etc., instead of the florid, red, crimson, or golden hue, which always commends itself to the eye and judgment of the beholder, and enables him to revel in fancy as to their flavor and deliciousness. To regulate this happy medium of moisture and sun-light, is the aim of the skilful cultivator, and will prompt him, to a great extent, in the use of the pruning knife or chisel.

The produce of the vineyards, arbors, and trellises, is now making its appearance in all its Californian glories, and in immense abundance and variety. I observe a large quantity of the Isabella Grape in the market than last season. This is a sort more suited, perhaps, to elevated ground than to the warmer levels—at least it is hardier than the majority of the Grapes cultivated here, and will stand frost well, being one of the fast increasing, hardy varieties. It is a kind, though, which requires to be thoroughly ripened, being very different from the Catawba, and many other sorts which are tolerably sweet and palatable when only half colored.

The second crop of Figs is now coming in plentifully. This is to many persons a most delicious fruit. With regard to its healthfulness there is but one opinion. The first crop generally produces the largest specimens. The brown Ischia is the most delicate species in flavor, and preferred to the blue or black varieties. They should be eaten as fresh as possible.

The fourth crop of Strawberries is still holding out well, and Raspberries this cool season, and near the coast, are in fair abundance, though, of course, high in price.

Pears are becoming more and more gigantic as the season advances. In passing along one of our streets I was much astonished at beholding a branch of the Vicar of Winkfield which bore fifteen immense, perfectly formed, and uniformly sized Pears, on a length of limb measuring sixteen inches only. The bearer of them informed me that the same tree bore in perfection forty-five Pears on a branch only thirty inches long. Some thinning of the fruit should, we think, certainly be practiced even in this wonderfully prolific soil, climate and region, to prevent trees from becoming too much weakened.

Amongst the Peaches one of the juiciest and best flavored is, the old and well known Heath Cling. The greatest objection to the majority of the Free Peaches now in market, is their dryness. The generality of them are yellow. Few of these are juicy, but most of them are now large and handsome. They are also generally wanting in fine flavor. The dryness of this climate and the winds tell much on them, and their flavor is insipid and wanting in richness and saccharine matter. The large and beautiful late Crawford Cling is plentiful now, and is rich and very juicy.

The Seckel Pear is mostly small this year owing, probably, to too heavy crops and want of thinning out.

The Belle de Flandres Pear is, on the contrary, very large and fine. This Pear is very different from the old reliable Bartlett, lasting but a short time, from its more tender and delicate texture.

Apples have come in plentifully, and are generally of good size and coloring. The only places to grow them to advantage, are, in the more elevated regions in this State; this makes them tolerably juicy compared with those raised in valleys.

The Gravenstein is now the most popular Apple on the stand. It is of second quality. Its color a bright yellow with distinct red and orange stripes, and very handsome. It is good eating, sweet, and of a sprightly acid, and excellent for cooking. The Jonathan is just coming in, of the first quality, tender, juicy and rich, with a good deal of the Spitzenberg character. It is a very fine and attractive Apple, from its rich red color, with light yellow ground. The best Apples raised in this State are chiefly from Sonoma and Napa counties.

Some boxes of the Catawba Grape are to hand. It is not very marketable here. Wine is not made of it, being too acid among so many sweeter wines.

The Kittatinny Blackberry is in market, a large, richly flavored fruit. It is a late kind.

Huckleberries are in small quantities at present—and Sweet Almonds are scarce.

The late true Damson Plum is in fair quantity—excellent for pies and preserves from its tartness.

Hovey's Seedling Strawberry is still the prevailing kind—with a few Triomphe de Grande. Vegetables in general, are at the height of their excellence. E. J. Hooper.

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Editorial Portfolio.

Force of habit has, from time immemorial, held a controlling influence over nearly all pursuits and occupations of life; and although new circumstances and new conditions have to a certain extent modified it, yet still we have too much of that adherence to old customs, old ways and old ideas. It is in agriculture and its kindred branches, that this force of habit is oftenest displayed, and where it has intrenched itself against agricultural enlightenment and intelligence.

It is the common impression, that, that which our fathers were accustomed to in farming, will answer every purpose for ourselves, and too often, the farmer of to-day follows in the footsteps of his ancient predecessor. This, as might be expected, prevents that advancement which we have a good right to look for. Farming to be successful, (in its broadest sense,) must be intelligent, awake to all that shall increase its crops or lessen its labors.

Agriculture, too, must be progressive—caring not only for the present, but looking well to the future and the needs of a people who are to come after us. The world requires larger supplies of food at the present time than it did a hundred years ago, and will require still more in the next hundred. With this increasing demand, comes also the fact, that new lands are becoming scarcer, and as a consequence the area of tillable land to be added to the agricultural field, is diminishing.

This destruction of the equilibrium between supply and demand, is only to be arrested by elevating agriculture and its kindred branches, to a more scientific standing. More attention must be paid to thorough cultivation; deep and careful plowing; the study and application of fertilizers; an intelligent and practical system (especially for California) of irrigation, are all subjects for careful and studious consideration at the hands of our agriculturists, and those who have at heart the welfare and advancement of this noble profession.

The whole science of the cultivation of the soil, is as yet in its infancy, despite the study and research it has received. Farmers are every day working out wonderful chemical changes by means of their growing crops, and yet a knowledge of the process, is to most of them unknown. Surely none will deny, that the result of intelligent labor, is much greater than that which is ignorant of cause and effect, relying solely upon what it has acquired by habit, or been handed down to it from a former age.

Here in California, the farmer occupies a new field, and, to a certain extent, is not to be governed by the same rules as his Eastern or European brethren. By a combination of soils and climates almost unparalleled on the globe, he is enabled to so broaden and extend his field of labors, as to embrace nearly all the products of the world. But to be successful, he must not let habit or custom rule him, only in so far as it shall result to his benefit, or be required by the existing circumstances.

What we want, is, active intelligence—a knowledge that shall be progressive, and not the exclusive property of any one man. Agriculturists should deem it their duty to exchange knowledge one with the other, and thus promote the general interests of all, as well as their own. The means by which this

is to be done, are the patronizing of local journals and papers devoted to agriculture; by supporting and encouraging fairs and exhibitions, and by establishing district societies which shall serve as a medium through which all the agricultural information of the different localities can be disseminated.

It is conceded on all sides, that California must depend, to a great extent, upon her agricultural interests to sustain her: Let us, then, bring intelligence into the field, mak- it work hand in hand with stout, sturdy labor, throwing aside erroneous and binding habit as not suited to our field of labors in this new and wonderful State.

UNION SQUARE.

This Square, which has been occupied for a number of years by the Mechanics' Institute for their grand industrial fairs, is to be delivered up to the City again, and a resolution has been passed by the Board of Supervisors to appropriate the sum of $10,000, for improving and beautifying this plot of ground.

Although the Square has served a noble purpose while under the control of the Institute, and the Pavilion erected there by that Association has attracted a larger number of people than the public square will, it is nothing but right that the original purpose should be carried out, and that the grounds should be dedicated to the public as an ornament and source of recreation for that class of our population, in particular, who cannot enjoy the privilege of walking amongst trees, shrubs and flowers of their own.

Every important city has its squares, parks and avenues; while San Francisco is much behind in this respect, although her climate admits of a far grander display of trees and shrubs, than is practicable in our Eastern cities.

However, our administrators and public officers have never attached much importance to the character of such public improvements, and as a consequence our squares are in a deplorable condition. We hope most sincerely that our present and future officers who have control over this matter, will do justice to our wants.

Money has been squandered most recklessly and no equivalent obtained for it. One half of the amount of money which has been expended in this direction might have produced a much better result.

But how was this done? The entire work of grading, fencing and planting was deputed to some unscrupulous contractors, who were made the tools of peculating committemen. What sense is there in giving the selection of trees, the arrangement of the grounds and the planting of lawns to parties totally ignorant of what is desirable and appropriate? Why should we not consult men who make it their study and profession to produce the best possible effect with the least possible expense?

The proper way to have such work done is to invite competition and to accept the most practicable, best and most economical plan. The work of the contractor for grading should stop after the grading is done, and the work of the carpenter should stop when the saw and plane have finished their work. To plant and arrange a public square is the profession and art of men, who are neither grading contractors, nor carpenters, and to them belong the work of making the grounds that which a considerate public has a right to expect. It is to be hoped that our Supervisors will exercise good judgment in the management of our public squares in the future.

Horticultural Notice. — At a meeting of the Oregon State Horticultural Society held in Portland, June 28th, 1871, the following resolution was passed, to wit :—

Resolved, That a committee on fruits be appointed, whose duty it shall be to examine the various fruits in their season, to correct the names, to examine and report on the probable value of new seedlings, and make their report at the annual meeting of this Society to be held at Salem during the State Fair.

AMERICAN POMOLOGICAL SOCIETY.

The meeting of this Society, held at Richmond, (Va.,) Sept. 6th, 7th and 8th, was an important event in the Pomological history of the country. The session was in every way harmonious and pleasant, and we have no doubt but that it will prove highly productive of good to the general interest of fruit growers throughout the United States.

The address of the President, the Hon. Marshall P. Wilder, has been received by us. It is an able paper and well worthy of perusal by all our Pomologists.

We make the following extracts from the concluding portion of it:—

"The importance and value of our calling in developing the resources of our country, in the occupation of unimproved lands, adorning our homesteads, enhancing the value of real estate, multiplying the blessings and comforts of life, and promoting a great source of national wealth, cannot be too highly appreciated. The more I reflect upon the progress we have made, the more am I confirmed in the belief that this branch of culture will ere long become second only to the growth of the bread and meat of our country. The enormous production of Strawberries and other small fruits, the millions upon millions of baskets of Peaches,—not to speak of the Apples and Pears and other fruits that are now annually produced—give promise that the time is fast approaching when all classes of society may enjoy these health-preserving edibles as a portion of their daily food. Nor can I refrain from referring once more to the benign influence which our employment has upon the moral and religious instincts of the heart, the refinement of taste, and the welfare of society. Whatever pleasure may be derived from other pursuits, there is surely none that has afforded stronger evidence of a high and progressive state of civilization, or a more ennobling influence than the culture of fruits. 'This,' says Gen. Dearborn, 'must have been the first step in the march of civilization, while the method of ameliorating their character and multiplying their varieties may be considered as taking precedence of all human efforts in the industrial arts.'

From the day when God gave our father in Eden, trees 'pleasant to the sight and good for food,' down to Solomon, who said, 'I made me gardens and orchards, and I planted in them trees of all kinds of fruits,' and through the successive generations of men the cultivation of trees and plants has been the criterion of taste and refinement. No object of attachment is more naturally allied to the instincts of the soul, and truly did Emerson remark: 'He who knows the most, he who knows what sweets and virtues are in the ground, and how to come at these enchantments, is the rich and royal man.' And what greater benefactions can you leave for posterity than these memorials, which shall live and grow, which shall tell of your love of the most beautiful works of nature, kindred and home when you are slumbering in the grave? Far better these, for the perpetuation of your memory and the benefit of the advancing millions of coming time, than all the monumental shafts and pillars of polished marble that ever graced the hero's tomb.

With the deepest sense of gratitude do I rejoice in the presence of a few of the founders of this Society, whose lives have been prolonged to this day. Ere long all those who were present at its first meeting, and he who by your indulgence has occupied this chair so long, will vacate their seats. Others will fill the places which we now occupy; but our Society and the cause it seeks to promote, will live on to bless the generations which shall succeed it.

Long may the members of this Society meet together as friends and mutual helpers, dispensing and receiving good; and may your efforts for promoting this most beautiful of all arts—this health-preserving and life-prolonging industry—be crowned with continued success. May the Society go on conferring blessings on our country until every hearthstone and fireside shall be gladdened with the golden fruits of summer and autumn; until

thanksgiving and the perfume of the orchard shall ascend together like incense from the altar of every family in our broad land, and the whole world realize, as in the beginning, the blissful fruition of dwelling in the 'Garden of the Lord.' And when at last the chain of friendship, which has bound so many of us together in labor and in love, shall be broken; when the last link shall be sundered, and the fruits of this world shall delight us no more; when the culture, training, and sorrows of earth shall culminate in the purity, perfection, and bliss of Heaven, may we all sit down together at that feast of immortal fruits—

'Where life fills the wine cup and love makes it clear;
Where Gilead's balm in its freshness shall flow
O'er the wounds which the pruning-knife gave us below.'"

SANTA CLARA VALLEY AGRICULTURAL FAIR.

The enterprising Agricultural Society, of Santa Clara Valley, held its Fair during the latter part of August, and with much better success than in former years.

The Floral Department consisted of the display of a fine collection of evergreens and flowering plants, by Mr. Wm. O'Donnell and Mr. L. F. Sanderson, very creditable to the exhibitors; also of a meritorious display of cut-flowers, from the gardens of Mr. Sanderson.

Of the Pomological Exhibitors, Mr. Fox made the grandest display. The varieties of Pears and Apples exhibited by this gentleman were very numerous.

The following is the list of

PREMIUMS AWARDED:

Plants and Flowers.—Best collection Hothouse Plants, premium to L. F. Sanderson.

Best collection Hardy Ornamental Plants, premium to Wm. O'Donnell.

Fuchsias and Geraniums, premium to L. F. Sanderson.

Plants, all varieties, premium to William O'Donnell.

Best assortment Cut-flowers, premium to L. F. Sanderson.

Second best collection of Cut-flowers, premium to T. D. Appleby.

Two Vase Bouquets, premium to L. F. Sanderson.

Two Parlor Bouquets and two Hand Bouquets, premium to L. F. Sanderson.

Also, special premium recommended to L. F. Sanderson, for his collection of Ferns, which the Committee consider "one of the most attractive features of the Fair."

Fruits.—Single bunch California Grapes, premium to D. M. Harwood, of San José.

Collection of Foreign Grapes, premium.

B. S. Fox (S. J.), collection Apples, prem.
Collection twelve varieties Apples, prem.
Collection Pears, premium.
Collection Nectarines, premium.
Collection Plums, premium.
Collection Currants, premium.
Collection Strawberries, premium.
Collection Pomegranates, premium.

Wm. Daniels (S. J.), Pears, single variety, three specimens, premium.

Charles LeFranc (S. J.), collection Wine Grapes, premium.

D. M. Harwood (S.J.), single bunch Foreign Grapes, premium.

S. B. Stockton (S. J.), collection Foreign Grapes, premium.

Nuts.—S. Lonnar (S. J.), Hard-shell Almonds, premium.

B. S. Fox (S. J.), best collection of Nuts, premium, $10.

SHIPPING FRUIT EAST A SUCCESS.

Mr. Reed, of Yolo County, has forwarded three car loads of Bartlett Pears to Chicago and New York, which arrived there in excellent condition. His agents there disposed of them at $6,50 per box, and Mr. Reed has netted about $4,000 out of this one shipment. This fact goes far to prove that fruit can be shipped East with safety, if judiciously packed; and it also demonstrates the fact, that the business may be made a profitable one. Enterprise and perseverance have met with success, and always will do it.

MAMMOTH SQUASH.

Mr. Robinson & Son, No. 217 Washington Street, of this city, has on exhibition a Marrowfat Squash, which weighs 195 pounds. It was raised on Brannan Island, Sacramento River, above Sherman Island.

THE WINE CROP OF LOS ANGELES.

The Viniculturists of Los Angeles County have just commenced pressing the Grapes for Wine. The crops of the smaller vineyards have been bought up by speculators and their agents: the average price paid is about one cent per pound, and even at this rate the vineyards will pay a handsome profit.

It is said that the bunches are not as full and the berries of less uniform size than was anticipated, but notwithstanding this, the crop is generally larger than that of last year.

BIG PEARS.

At the San Joaquin Valley Fair, a Mr. Peters exhibited sixteen Pears, grown on one tree, which weighed one pound each.

NEW PUBLICATIONS.

We have just received the *Young Folks' Rural*, a monthly journal for the young people of both country and city, and designed for the cultivation of a taste for rural life.

It is published by H. N. F. Lewis, of Chicago, and deserves an extensive patronage.

We are advised of the publication of a new work on "Forest Trees," for Shelter, Ornament and Profit: by Arthur Bryant, President of the Illinois State Horticultural Society.

We have not seen the work, but judge it to be of much value.

CATALOGUES RECEIVED.

During the past month we have received many valuable Catalogues, most of which are neat and valuable publications. We mention—

"Catalogue of Stove and Green-house Plants, including Orchids, Palms, Ferns, etc., for sale by Geo. Such, of South Amboy, New Jersey."

"Descriptive Catalogue of New and Beautiful Plants, Fruit Trees, etc., cultivated and for sale at the Dobroyde Nursery, Ashfield, Sydney, N. S. W."

"Dreer's Descriptive Catalogue of Bulbs and other Flowering Roots, sold by Henry A. Dreer, of Philadelphia, Pa."

"Vick's Illustrated Catalogue of Hardy Bulbs, for sale by James Vick, Rochester, N. Y."

"Wholesale Catalogue of Hyacinths, Tulips, Crocus, Lilies, French Hybrid Gladiolus, etc., for sale by C. L. Allen & Co. 76 Fulton Street, Brooklyn, N. Y."

"Hovey's Illustrated Catalogue of New Plants. Hovey & Co., Boston, Mass."

"Catalogue of the Reading Nursery: by J. W. Manning, Reading, Mass."

"Wholesale Catalogue and Trade List of Fruit and Ornamental Trees, for sale by F. L. Perry, Canandaigua, N. Y."

"Wholesale Price List of Burrow & Wood, Nurserymen and Florists, at Fishkill, Dutchess County, N. Y."

"Semi-Annual Trade List of Hoopes Bro. & Thomas, Cherry Hill Nurseries, Westchester, Pa."

"General Trade List of Nursery Stock, for sale by Wood & Hall, Geneva, N. Y."

"Wholesale Catalogue of Superior Dutch Bulbs, for sale by L. Van Waveren & Co., Holland. Richard Lauer, New York, Sole Agent."

"Trade List of W. F. Heikes, Dayton, Ohio."

"Trade List of Fruit and Ornamental Trees, for sale at the Monroe Co. Nurseries, Rochester, N. Y."

"Wholesale Trade List of T. Sprague & Co., of the Erie Comercial Nurseries, Erie, Penn."

"Descriptive Catalogue of Pot, Plant, Garden and Veranda Trellises, by Nourse, White & Co.l Westborough, Man."

NURSERIES OF ELLWANGER & BARRY, ROCHESTER, N. Y.

We call particular attention to tbe advertisement of these gentlemen, in another column. The stock which they have sold to parties on this coast, during the past season, has generaliy given satisfaction.

WOODWARD'S GARDENS.

Since our last visit to these Gardens, we note that many additions have been made to the interesting collection of choice plants in the conservatories. Among them we notice several new varieties of Ferns, also of Azaleas and Hybiscus. A new Passion Flower—(*Passiflora trifaciata*)—flower pure white with light purple edges, small, and particularly well formed. Some new Begonias of considerable beauty. One of several specimens of a new tuber *Biedenbergia* has thrown up a vigorous flower stem and is rapidly developing; this is a particularly interesting plant. We also noticed a new variety of Aloe. A fine specimen of *Gloria superba* in full flower. A very pleasing double Geranium (*Empress Eugenie*) of particularly delicate tint.

But what pleased us most was, the Gem of the Gardens, the *Espiritu Santo*, (Holy Ghost Flower,) in full flower, its delicately white and elegantly formed wax-like blossoms present, in the centre, a curiously close resemblance to a dove with partially extended wings, as depicted in many church embellishments, hence, its name. The perfume of this flower is peculiarly rich and delicious, and, combined with that of a neighboring Stephanotus, also in full flower, was almost overpowering.

Our attention was also drawn to a specimen of *Marauta tuberspatha*, and to several Alligator Pears, starting into vigorous growth. We were disappointed of seeing the Night-blooming Cereus in flower. Some ungracious wretch had wilfully destroyed the bud. Strange! that among a people who justly pride themselves on their education and refinement, and among a concourse of well dressed visitors, so large a percentage can be found who are capable and guilty of the meanness of not only stealing a flower, (frequently a choice and only one,) but of fatally tearing a plant to gratify this detestable passion. The Managers of the late Horticultural Exhibition, know too well how fearfully this was exemplified on that occasion.

SQUASHES.—Treat the same as Cucumbers, and cultivate until they cover the ground.

Correspondence.

POMOLOGICAL CONVENTIONS.

WASHINGTON, Sept. 11th, 1871.

Editor California Horticulturist:

Last week, at the joint Convention of the "National Pomological Society," and the "Virginia State Society," I witnessed the largest and richest display of Fruits, of every variety, ever exhibited in this country.

They met in "Assembly Hall," in the City of Richmond, Va., and continued in session Wednesday, Thursday and Friday, the 6th, 7th and 8th of September, instant.

The increased and growing interest for Horticulture, the favorable season in most sections of the country, and the increased railroad facilities over previous years, have conspired to render the present Fruit Exhibition in Richmond the finest and largest ever before witnessed in this country. Besides, it is the first ever held by the National Society south of the Potomac. The Biennial Convention was held two years ago in Philadelphia, and was a very splendid and satisfactory affair, but this one eclipses all previous ones, both in the matter of delegates and fruits, and the extent of country represented.

Some twenty-six States and Districts were represented by delegates and fruits. The principal exhibitors were—

From the District of Columbia, John Saul, with Potomac Fruit Growers, exhibited fifty six varieties of Pears and eighteen of Apples, besides Figs, Grapes, etc.

Mr. D. O. Munson, of Fall's Church, Virginia, fifteen varieties of Pears, and a quantity of Apples, Grapes, etc.

J. B. Clagett, some fine specimens of Pears, the Duchess.

Mr. William Saunders, Superintendent of the Agricultural Grounds, etc., at Washington, exhibited forty varieties of Pears, a number of Southern Grapes, and other fruits, all very fine.

Virginia—Gillingham, Wright, Cox, and others, a fine show of Apples, Pears and Grapes, from Fairfax Co.; G. F. Leighton, of Norfolk, exhibited, of his own growth, specimens of the Duchesse d'Angouleme Pear, weighing thirty and a half ounces. From one tree he took two of the size specified, and another weighing twenty four ounces. His Pears look as if they were grown to feed giants.

From New York—Ellwanger & Barry exhibited one hundred and fifty seven varieties of Apples, with other fruit.

Iowa—Mark Miller, and others from this State, had on exhibition a collection of two hundred and fifty varieties of Apples, representing the staple fruit of this growing young State. Many of them were beauties in appearance, while others were equally remarkable for their size.

Nebraska—Mr. R. W. Fernas, of Nebraska, showed sixty nine varieties of Apples, a number of Pears and Peaches, and some Grapes; while Mr. J. H. Masters, of the same State, had sixty five varieties of Apples, thirteen of Pears, and a variety of Plums, Grapes, etc.

Massachusetts—The President of the Society, Marshal P. Wilder, exhibited two hundred and fifty varieties of Pears, and it would be hard to name a variety which he had not in his collection.

California—This distant State made a splendid show, of many varieties, showing her rich in many things. The Bartlett Pear, for example, was as large as our ordinary Duchess, and Seckles were as big as good sized Apples, and beautiful in proportion. Amber Plums as large as goose eggs were flanked by mammoth bunches of "White Muscat" Grapes larger and greener looking than the Malaga, while Flemish beauties, (Pears,) twenty ounces in weight, which would have excited the admiration of a painter, were brought in contrast with blushing Tokay Grapes in bunches large enough to suggest those found in the land of Canaan. Then there were native Olives, green Oranges, "pound Pears," varieties of Grapes, and all in a fine state of preservation.

Many other States were represented.

COMMITTEES ON PREMIUMS.

To decide on the various Premiums, the following committees were appointed:—

On Virginia State Agricultural Society's Premium of $100, for best collection of fruit—Apples, Pears, Peaches and Grapes: Wm. Saunders, of Dist. Col.; P. J. Berckmans, of Ga.: and W. T. Smith, of Geneva, N. Y.

On Premiums offered by Marshall P. Wilder on Pears $30, Fllwanger & Barry on Apples $50, Thos. P. James, on Peaches $30: Chas. Downing, of N. Y.; W. L. Steele, of N. C.; and P. T. Quinn, of N. J.

On Premiums offered by Chas. Downing of $50, R. L. Page of $10, Jno. B. Whitehead of $20, Downward, Anderson & Co. of $10, C. T. Wortham & Co. of $10: Wm. Perry, of N. J.; G. F. B. Leighton, of Va.; and Robert Corse, of Md.

On Premiums for Figs, Oranges, Olives and Pomegranates: Hon. J. B. Whitehead, of Va.; John Feast, of Baltimore; and Col. Hardie, of Fa.

On Gratuities offered by G. F. B. Leighton, Randolph & English, the Southern Fertilizing Company: J. H. Masters, Henry Ellwanger, of New York, and O. T. Herstine, of Pennsylvania.

On Premium of $25—best Apples for general culture in Kentucky—by J. S. Downer: Wm. Heaver, of Tennessee; Dr. William M. Howsley, of Kansas; and John S. McIntosh, of Ohio.

On Fruits exhibited by the American Pomological Society: John E. M. Gilley, of Massachusetts; B. K. Bliss, of New York; and Dr. James T. Johnson, of Virginia.

On Premiums offered by Smith, Clarke & Powell, and D. D. T. Moore, of New York, *Southern Planter and Farmer*, and the *Rural Carolinian:* W. C. Barry, of New York; R. J. Page, of Virginia; and D. B. Weir, of Illinois.

AWARD OF PREMIUMS.

The Committee on Special Premiums for the best collection of Apples, Peaches, Pears and Grapes, reported that the only entry meeting the requirements of this premium is that from Nebraska, and respectfully recommend that the premium of $100 offered by the Virginia Pomological Society be awarded accordingly.

(Signed) W. SAUNDERS,
W. B. SMITH,
I. BERKSMAN,
Committee.

On the reading of the report, Col. Furnas, of Nebraska, stated that the Nebraska Society donated the American Pomological Society the premium which had been awarded them.

The donation was accepted, and three cheers proposed and given for Nebraska.

The Committee on Grapes presented the following report:—

We, the undersigned, appointed to award premiums on American Grapes, as per special premiums contributed by Chas. Downing, General L. R. Page, Hon. John B. Whitehead, Messrs. Downward, Anderson & Co., and Messrs. Charles T. Wortham & Co., respectfully submit the following report:—

1. No collection of twenty varieties of American Grapes found.
2. No half bushel of Flowers Grapes found.
3. Premiums of $20 awarded to John Hopkins, Wilmington, North Carolina for half bushel of Scuppernong Grapes; who also exhibited a half bushel of large Black Grapes, which he called Muscadine Superior, and which he claims as a seedling of his.
4. Premiums awarded to Michigan State Pomological Society of $10, for best twelve bunches of Delaware Grapes.
5. Premiums of $10 awarded to J. W. Porter, for best twelve bunches of Northern Seedling Grapes.

WILLIAM BARRY,
G. F. B. LEIGHTON,
Committee.

The President, M. P. Wilder, delivered his Biennial Address—a sound, instructive paper.

TREASURER'S REPORT.—Mr. T. P. James, Treasurer, submitted his Biennial Report, showing that the receipts of the Society have been $1,003 03, and that there is a balance of $124 16 on hand.

It was voted to hold the next meeting at Boston, Mass.

After business and discussion, the Society adjourned. D. S. C.

Editorial Gleanings.

EFFECTS OF DEEP PLOUGHING.

We consider the matter of deep and thorough cultivation so important, that we feel justified in frequently dwelling upon it. In this instance we make room for an article under the same heading, which was recently published in the *Rural Carolinian*, and which suits us exactly. Here it is:

A correspondent, who has experimented in deep ploughing, thinks it don't pay—in fact, that it is wrong in principle and ruinous in practice. He took a fair piece of ground—a sandy soil with a good clay subsoil—and turned it over to the depth of twelve inches, throwing up considerable clay. The result was not more than half the crop which the land would have produced, if ploughed in the usual (shallow) manner.

We see no reason to doubt this statement; but we protest against the *Rural Carolinian* being held in any way responsible for the result. While we fully believe in a deep breaking up of the soil as a general principle and a general rule, and have frequently said so, we have also frequently warned our readers against *turning under their shallow soils too deeply*, or turning up too much of the subsoil at one time. He should have *gradually* deepened his soil, breaking up below with a subsoiler.

But while our correspondent has fallen into an error, he is too hasty in his inference, that the land is ruined. Unless there be something actually deleterious in the subsoil, we venture to predict that that piece of ground in question, if peas or some other green crop be grown on it and turned under

the present season, will next year produce a fair crop, and will continue to improve till it will be far more productive than the adjoining land treated in the ordinary way. The action of the atmosphere, the sun, the dews, and the rains, assisted by the roots of plants, will finally make of the crude materials turned up a fertile soil. A case in point falls under our observation as we write. A correspondent of the *Prairie Farmer* turned up a piece of land, with a side-hill plough, to the depth of fifteen inches. He got scarcely any crop. He seeded it to grass and pastured it for several years, when it was turned over again as deeply as before. It yielded better and continued to improve for years. He adds :

This was twenty years ago and upward. The land still shows the benefit. It has, since it became established, acted like a different soil. The deep ploughing—and that repeated—drained it and mellowed it so that it withstood the drought and the wet—the drought especially, which is severe on elevated drift soil. But it had clay enough and was mellow. On the yellow knolls there was the old condition ; the clay was missing, and so were the grain and the grass ; it was too dry.

The editor of the *Carolinian* concludes as follows : But the best way to deepen a soil, is, to do it gradually. In this as in everything else, good judgment is essential. We can only supply facts and principles. Our readers must make use of brains, as well as muscle, in applying them to the preparation of the soil and the making of the crops, adapting the teachings of science and experience to each particular case. Never blindly follow any leader, while you have eyes of your own and know how to use them.

Tree Culture—The *Prairie Farmer* very justly commends the spirit that has seized the farmers of Illinois, to plant forest trees. It is clearly a providential instinct, for it has swept the country like an epidemic. Every one asks: "How many trees have you planted this year?" Not one in a hundred answers "None." At every agricultural meeting, members vie with each other in reporting the largest number and the greatest variety set out. They are mostly from seed, and usually eight feet apart, to be thinned out as they expand in dimensions. Every one speaks of the increased retentiveness of the soil for moisture, within the influence of their protection. Especially they attest their sheltering effect against the dessicating and disagreeable winds that are the great objection to life on the treeless prairies. They report a notable improvement in health—less ague and rheumatism, and less catarrhal disturbance. A few years ago, some leaders of the movement planted trees as wind-brakes to their orchards and their dwellings. In every instance these have worked wonders in giving increased fruitages, exemption from spring frosts, and unspeakable comfort to the family and to the barn-yard. The saving of cattle feed is found to be no small item; for every protection from adverse weather enables stock to thrive on less fodder. Villages, which a few years ago wore a bare and cheerless look, are now assuming the sweet attraction of their old New England homes. It favorably affects immigration. First impressions have driven many a new comer from the prairies. Since the furor for tree planting, the repulsiveness is fast being changed to attractiveness. Among the beneficial effects of the young forest may be mentioned many permanently-flowing springs, which had long ceased to run, and new ones not previously observed. We wish this tree planting epidemic would extend to California. There are premonitory symptoms indicating that the contagion has reached our borders.

Food.—Diet has much to do with health, and also something to do with mental condition. It is held to be an axiom that a gross feeder will have a gross mind. I doubt if true refinement of manners can exist in conjunction with an exclusive pork diet. It is

certain, at least, that children will grow up more healthful and beautiful in families accustomed to a variety of well cooked food, than in those dieted upon invariable salt pork, or food fried to the pliability of leather. In one case clear complexion and plump figure will be the rule, and in the other a leathery skin, angular features, lean forms, and irritable and selfish dispositions.

There is great diversity in farmers' families in this respect. A large number combine the best known hygienic regimen, good cookery, fresh material, and variety with simplicity of serving. Farmers have an advantage over all others in fresh vegetables, milk, cream, butter, and eggs, and some disadvantages in variety and convenience of meat supplies, which can all be easily overcome, however, by a provision of fowls, lambs, and a little neighborhood arrangement for the exchange of other meats. On the other hand, then, there are farmers abundantly able to provide wholesome fare who live abominably, and their children are neither handsome, healthy, nor good-natured!

Careful observation and a little reflection will teach them the importance of diet in *education*. A dyspeptic stomach can never rest, and without periodic repose of stomach and brain, mental labor cannot be long performed. Farmers who bestow so much attention upon the thrift and fattening of domestic animals, should at least allow their children equally favorable conditions of health. It is indisputable that in many cases the cattle are the favored party, and the children are neglected.—*Ag. Rep.*

Management of Dahlias.—In growing Dahlias for exhibition, it is a great mistake to try to have a large number of blooms. It is much better to pluck off all small and unpromising flowers, and to save a few of the choicest for culture. The supports of the plant should be looked to, and stakes added wherever they are required. Some experienced growers prefer wire trellises to stakes, as the branches can be well secured on them. It is a common practice to remove some of the side branches, but this is an error, as the shock is surely felt by the plant. If the Dahlia be pruned as fruit trees are, that is, the weak and worthless branches and such as are crossing and crowding each other are removed, the flowers will be larger and finer than if the plant is cut more. The foliage of the Dahlia is of too much use to be wantonly decreased by breaking off large branches. If great care is not taken, branches that cannot be spared will be broken by high winds.

When a flower bud or two have been selected on a branch, all other buds on the same branch should be removed, so that the flowering strength may be thrown into the buds that remain. Some growers advocate covering the blooms, as it preserves them better, but the petals of the covered flowers are always thinner, and the colors less vivid than those which are exposed to the sun. A flower that has been fully exposed will bear carriage much better than one which has been covered. Every flower should be cut off as soon as it has passed its prime, or is known to be useless. Producing flowers weakens and exhausts a plant very much, and the removal of such as are past their prime is a relief which is immediately felt. A shade which will protect from the stronger rays of the sun is useful, but light and air should not be excluded. Weak liquid manure is very grateful to the plants, but where they are watered, the whole ground about them should be well soaked, and not merely the roots.

Mulching has been frequently tried, and as often abandoned. Its faults are, that it encourages injurious insects about the roots, and induces the fibers of the root to come to the surface. All plants are the better for sending down their roots after moisture, instead of deriving it from near the surface; for this reason all irregular and partial waterings are bad. The foliage of Dahlias should be well syringed with soft water after the sun is down.—*Western Rural.*

Radishes.—Sow occasionally for a succession, if desired.

New Annuals: Godetia Whitneyi and Phlox Heynholdii.—The first-named of these newly-introduced annual flowers having been figured, and very highly spoken of in more than one horticultural periodical during the past spring. I was consequently induced to use it rather freely, and I confess was beginning to entertain doubts as to its realizing the good opinion I had been led to form of its merits, as it did not begin to flower until the first week of July. But I am now glad to be able to say that it has fully realized all my expectations. It is without doubt one of the most showy and attractive annuals that has ever been introduced; but to do it full justice, it ought to be grown *en masse* in a bed of considerable dimensions, or to form a line in a ribbon border of considerable length. It is then in appearance really magnificent, resembling, at a distance, a line of the finest dwarf Rhododendrons in full flower, or of some fine variety of Hibiscus. It grows from a foot to fifteen inches high, and is exceedingly floriferous, each bloom being quite three inches in diameter, color rosy-pink, with a crimson spot in the center of each of the four petals; this spot, however, is more clearly defined in some plants than in others, and on this account care ought to be taken in selecting seeds from the best colored plants. Should this plant prove to be continuous in blooming, as it has at present the appearance of being, it will certainly prove very useful, even as a bedding plant. I sowed the seeds about the middle of March in pans in a gentle heat, pricked out into pans or boxes when large enough, and finally planted out about the middle of May. Phlox Heynholdii is also an annual of recent introduction, which I think only requires to be better known to insure its being more extensively used. It belongs to the Drummondii section, but is more dwarf in growth, seldom exceeding six or eight inches in height, and producing an abundance of rich flame scarlet-colored flowers. It has also the property (not always possessed by the finest annuals) of producing itself quite true—that is, without any variation either in the color of the flower or in the habit of the plant, and continues to flower until late in the season.—*P. Grieve, Culford.*

[The *Godetia Whitneyi* is a native of California, and was found in Humboldt Co., by Professor H. N. Bolander, who transmitted the seeds to England. It is in great favor there, while in its native state we do not think there is a single plant cultivated.—Ed.]

Influence of Climate Upon Vegetation.—It is not alone the exterior appearance of plants which climate alters, it has a distinct action on the chemical compounds of vegetables. Dr. Darwin says, the chemical qualities, odors and tissues of plants, are often modified by climate in a manner which seems to us extraordinary, and is remarkbale, because it might have been thought that definite chemical compounds would have been little liable to change either in quantity or quality. The Hemlock yields no Conocine in Scotland, the Aconitum napellus becomes innocuous in frigid climates. The Rhubarb flourishes in this country, but does not produce those medicinal substances which make the plant so useful when grown in its own country. The China Tea Tree grows well in the west of England, amazingly so in South Carolina, in neither case is Theine yielded. The wood of the American Locust Tree in England is as worthless as that of the Oak (*Quercus robur*) grown at the Cape of Good Hope, or as the Tasmanian Gum Tree grown in the vicinity of Melbourne. Dr. Falconer says, there is a great difference in the fiber of the Hemp, in the quantity of oil in the seeds of the Linum, and of Morphine in the Poppy, when these plants are cultivated on the plains or on the mountains of India. The same species of Cactus has been carried from Canton, Manilla, Mauritius, and from the hot-houses of Kew. They were all alike in appearance, but the Cochineal insect thrives only on the native plant, on which it thrives prodigiously. Monsieur Berthier says, if we compare amongst themselves the ashes of wood grown on land of different kinds, it is seen they differ remarkably, which seems to establish the fact that climate has an influence on their consti-

tution. These examples are pertinent, so far as they go, to show how comprehensive and complete must all circumstances be to bring a plant up to its maximum state.—*Ex.*

How Cherry Trees Should be Grown.—Years ago it was just as easy to raise a good crop of Cherries as to raise a good crop of Apples. We remember, when a boy, we made good wages picking this fruit at fifty cents the bushel, the trees gave such an abundant crop. Several years ago a change seemed to come over the Cherry Tree. When grown too rapid, they burst their bark in many places, permitting the gum to exude in abundance; and finally, the limb or branch would die. Warts, also, became numerous, and did considerable damage; the curculio began to destroy the Cherry as he had already the Plum; and lastly, a severe drought followed by a severe winter, seemed to give the finishing touch to many of the Cherry-trees. The remedy for the first trouble, we believe is within our reach. We remember, some years ago, a neighbor bought a hundred Cherry-trees, and set them out in an orchard, and began to manure, and treat them in this respect as he had done his Apple orchard, which was in a very thriving condition. In a year or two many of the trees burst their bark, turned black, and parts died; and this continued until three-fourths of the whole were dead, or nearly so, being quite worthless. It was evident to the farmer that he had killed his trees by kindness; and he stopped manuring, and sowed his land down to grass; and this saved them. What would do for the Apple-tree would not answer for the Cherry. We know another orchard, now some years old, that we set out for a neighbor, where the trees have been kept in grass ever since the second year after they were set; and these trees have made a good, sound, healthy growth each year, and latterly, even for ten years past, except a single year, have borne good crops of fruit. There is not a more healthy Cherry orchard in the country. These trees have never suffered by the bursting of the bark, nor from warts. The best trees may be so forced in growth as to become tender and diseased, and in a short time worthless, as neighbor Jones' trees did. We are perfectly sure that all who have been troubled by diseased Cherry-trees, will, if they adopt the plan we have referred to, soon see the beneficial effects of it, and, though they may have to wait longer for fruit, will succeed in saving their trees.—*Journal of Horticulture.*

Fibrous and Oil-Yielding Plants.—Some consideration has of late years been given towards the growth of Fibrous and Oil-yielding Plants in our colonies and foreign possessions, and amongst the latter the Sunflower, *Helianthus Annuus*, has been favorably spoken of. The plant is largely grown in Russia for the sake of the oil; and it is said that, under a good system of cultivation, a bushel of seed will yield a gallon of excellent oil, which can be used for burning in lamps, for soap-making, or painting, and if properly refined, it makes an excellent table oil. It is said to be much used for adulterating Olive oil, and is exported from St. Petersburg in large quantities, fetching about 10*s.* 6*d.* per cwt. The refuse, or marc, after the expression of the oil, is an excellent food for cattle. Horses, cows, and poultry are said to fatten rapidly after being fed with these seeds. In many places in Russia they are boiled and eaten by the people, and, when properly shelled and pulverized, they make good flour, which being sweet, is very suitable for making cakes. The dried leaves are given to cattle instead of straw, and the stalks are said to produce a large quantity of alkali. One of the most recent applications, however, that has been advocated for the stems of the Sunflower is the manufacture of paper. Considering the ease with which these plants can be grown, and the quantity of seeds each one produces, it is time, if they are so really valuable, that they were made more generally useful.—*Gardener's Chronicle, London.*

Peas.—Vines which have borne an early crop should be pulled up and burned, and their place occupied by Cabbage plants.

Our Newly Appointed Commissioner of Agriculture.—Hon. Frederick Watts, of Carlisle, Pennsylvania, has been appointed successor to General Capron as Commissioner of Agriculture, to date from the 1st of August. Judge Watts is a native of Carlisle, and was educated at Dickinson College, where he graduated at the age of nineteen. Immediately after his graduation he went to Erie County, Pennsylvania, and there lived three years with an uncle, working daily on his farm. It was while residing with this uncle that the taste for farm life, which has characterized his whole career, was fully formed, and a practical knowledge of its essential requirements thoroughly learned. Returning to Carlisle, he studied law with Andrew Carothers, and was admitted to the bar. He practiced his profession until 1848, when he was commissioned by Governor William F. Johnson as presiding judge of the ninth judicial district of Pennsylvania, composed of the counties of Cumberland, Perry, and Juniata. This office he held for three years, when, it having been made elective, and the district being under the control of the political party with which he was not in sympathy, he retired from the bench and returned to the bar. He did not, however, actively engage in his profession—a large portion of his time being devoted to the personal superintendence of a farm near Carlisle. For many years he had been a farmer as well as a lawyer, and had become known as one who believed in the application of science to the tilling of the soil. In 1858 he abandoned entirely the practice of law, and since then has been exclusively a farmer. During the last few years he has resided on his farm, giving to all the details of its management his personal attention. He is also the owner of another farm, which he manages through a tenant.

Judge Watt's prominence as a farmer led to his election, in 1856, as the first president of the Pennsylvania Agricultural Society, which office he held until 1862, when he declined a reëlection. He was elected the first President of the Board of Trustees of the Agricultural College of Pennsylvania, a position which he still holds. He has never been prominent as a politician, although entertaining at all times positive views of public policy, and has never been a candidate for either congressional or legislative honors. He was not an applicant for the distinguished position to which he has just been appointed, and its duties and responsibilities have been accepted with reluctance.

Judge Watts is a practical and scientific farmer. He has devoted his life to the practice of progressive methods of deversified agriculture, and has always manifested a deep interest and genuine enthusiasm in the advancement of the farmer's calling. In his new office he may be expected to give to all the agricultural interests of the country the same intelligent and industrious attention he has bestowed upon the varied operations of his own farm and the agriculture of Pennsylvania.

Mammoth Cluster Raspberry.—Bush very rank, upright grower, but with few thorns; foliage rich dark-green; fruit extremely large, and holds out large to the very last picking. Black, with a rich purple tinge or bloom; very juicy, high flavored and delicious. Plant does not sucker, but increases by layering the tips. Perfectly hardy, having stood the most severe winters, (with mercury down to 28 degrees below zero,) without the least particle of damage. Surface sufficiently firm to carry to the most distant market. Season extremely late, which makes it very valuable on account of filling in a blank space, heretofore felt by all, between Raspberries and Blackberries.—*Small Fruit Recorder.*

Death from Mulberries.—Five persons have recently been found dead in Mississippi under Mulberry trees. Death in all these cases has been attributed to eating Mulberries which have been impregnated by locusts. In the stomach of one colored boy, says the *Woodville Republican*, was found a quantity of Mulberry seeds and the locust eggs. Two children in Williamson County are also reported to have died from eating Plums similarly impregnated.—*Pomologist & Gardener.*

A California Hedge Plant.—The California *Agriculturist* recommends the California Wild Cherry *(Cerasus illicifolia)* as a very superior plant for ornamental hedges. It is an evergreen, with foliage of a sprightly, delicious green, that sparkles in the sunlight. It is very dense and compact, stands pruning well, and with its crinkled leaves hides both limbs and stocks. F. B. Fuller, opposite the Los Gatos Nursery, has a splendid showing of hedges of this plant, from seed which he planted where they were to grow. The hedges are in their fourth year, having been pruned twice each season, and stand now about three feet high and two broad—models of neatness, elegance and thrifty growth.

We clip the following from the July Report of the Department of Agriculture :—

"Cultivation of Asparagus.—The culture of Asparagus was lately the subject of discussion by the members of the Horticultural Society in Dessau; and among the views expressed were the following: That the old method of burying large quantities of manure deep under the surface was objectionable, since Asparagus does not derive its nourishment from a great depth, and the plants often become too deeply imbedded when the thick substratum of manure collapses by rotting. The preference often given to old plants, in making selections for a new bed, was also considered a mistake. Plants become sickly and less vigorous in the seed bed, so as to be much more sensitive to the change in transplanting. Southern exposure, shelter from cold winds, a porous soil, and the total absence of trees, were recommended as essential conditions to the highest success. The soil is to be turned to the depth of from two to three feet, and then manured to the depth of one foot. This is most conveniently done in autumn, during dry weather. Spring is the best time for planting, and the best direction of the trenches for the reception of the plants is from north to south. The earth taken from the trenches is "walled up," as it is termed, between the rows, and upon these other vegetables may be cultivated while the Asparagus bed is young; but they are eventually absorbed in filling up the ditch around and between the plants. Well-rotted manure, or suitable compost, is combined with the earth of the walls for this purpose. Besides giving constant attention to stirring the soil and weeding, the young plants need to be watered regularly whenever the state of the weather requires it."

Value of the Sunflower Plant.—"Attention is called by the editor of the Journal of *Applied Science* to the great value of the Sunflower plant in various economical applications. According to this article, the Sunflower can be cultivated very readily, an acre of land sustaining 25,000 plants at twelve inches distant from each other. The flowers are very attractive to bees and furnish a great amount of honey. The average production of seeds may be estimated at fifty bushels to the acre, yielding fifty gallons of oil. This is said to be equal to olive oil for table use, and is well adapted to burning in lamps, soap-making, and painting. The refuse of the above quantity of seed will produce 1,500 pounds of oil-cake, and the stalks may be either burnt to furnish potash, or, when treated like flax, may be made to yield a fiber as soft as silk, and in large quantity."

Indian Mallow.—The truth that a weed is only a plant out of place is again illustrated, this time with the Indian Mallow, a weed that has greatly troubled the Illinois farmers, being more difficult to eradicate than the Canada Thistle. But now it is discovered that the fibrous formation of the stalk of this plant is such that cordage, textile fabrics and paper can be made out of it, and the hated weed may yet become the staple agricultural product of the State. If half what the inventor of the method of manufacturing the fibre claims for it is true, the plant would seem likely to become one of the most valuable in cultivation.

The Mesquit Bean.—Every one who has traveled in Texas, Arizona or Mexico, knows what the Mesquit Bean is. In Texas, forests of Mesquit trees occur in regular succession, which bear so close a resemblance to Peach orchards that the illusion is only dissipated by looking after the fruit. These trees produce Beans of two or more kinds. One of the varieties is enclosed in a pod, like the ordinary Garden Bean; the other is bifold—the two parts being spirally interlocked—constituting a Bean from three to four inches in length. This Bean is remarkably juicy and nutritious. The flavor is a pungent, sour-sweet, and is highly prized as food by the Indians—still more so by horses and cattle, which will thrive and fatten in a Mesquit range. This variety is called the "Screw Bean," and the crop this year is said to be unusually large in Western Texas. The trees are represented to be bending and breaking under the unparalleled weight of the yield. The farmers of that region, who are rather few and scattered, are gathering the Beans and garnering them for a winter supply for their stock. This suggests that the Mesquit might be transplanted into localities of this State, where timber is needed, and the soil otherwise non-productive. The timber of the Mesquit tree is excellent for firewood—perhaps for other purposes—in addition to yielding its annual abundant crop of the nutritious Screw Bean.—*Morning Call.*

[We have now a few plants under trial, and we hope to be able to give a satisfactory result. So far, the young plants are doing well.—Ed.]

The Cotton Experiments in California.—The *Morning Call* of the 27th has the following:—"The editor of the Snelling *Argus* supplies us with information concerning Colonel Strong's experiment in cotton raising on the Merced. He recently paid a visit to the field, and says some of the stalks have over two hundred well-developed bolls each, and one contains two hundred and fifty bolls, all of which will mature. Colonel Strong now calculates upon gathering a bale and a half of clean Cotton to the acre, which is more than three times the average product of the cotton lands of the Southern States. Several thousand pounds of the Seed Cotton has already been picked out, and is ready for ginning, which process will commence in a few days. Major Strong, brother to the Colonel, has a cotton field in Los Angeles County. He passed through this city a few days ago, on his way to the Merced, and informed us that his crop bade fair to realize his expectations. It only needs the withholding of frost to make a good yield."

The Currant-Worm.—The Boston *Journal of Chemistry* gives the following:—We are informed by Dr. E. Worcester, of Waltham, that the Currant-worm, so destructive to a favorite fruit, may be fully and almost immediately destroyed by the use of carbolate of lime. The doctor tried the powder in many instances during the summer, and found that while it was fully as effective as hellebore, it was less disagreeable, less costly and perfectly safe. The method of using it, is, to sprinkle it over the vines as soon as the worm makes its appearance, bringing it well in contact with the leaves, and soon the insect is destroyed. It will need but two or three applications, and the work is done. In this way, for a few cents, large quantities of Currant bushes may be saved and the fruit allowed to mature, and no danger whatever incurred. Neither the foliage nor the fruit is in any way injured by the carbolate of lime.

The *Mendocino Democrat* is responsible for the following:—

"A Precocious Grape Vine.—There is a Grape Vine in the garden of Joel F. Noel, of Calistoga—two years from the cutting—which has Grapes upon it that will weigh, when ripe, from 75 to 100 pounds!"

Spinach.—Sow the New Zealand for summer use, three or four plants to a hill, which should be rich, and about six feet apart, as the plants spread.

THE

CALIFORNIA HORTICULTURIST

AND FLORAL MAGAZINE.

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HARDY FLOWERING SHRUBS.

To enumerate all the Flowering Shrubs which are hardy, *i. e.*, adapted to out-door cultivation, in our Californian climates, would make up a list too extensive for our Magazine, and we are therefore compelled to confine ourselves to the best and most promising kinds.

There are many hardy flowering shrubs, which would be desirable in our gardens, but local circumstances are adverse to their successful growth: we mention, for instance, the Azalea, flowering Pomegranate, Oleander, etc. The two latter grow to perfection in Sacramento, Marysville, Stockton, San José and in all similar climates, because the climate there is well adapted; but the Azalea has not been cultivated with any encouraging result anywhere in California, and we give as the sole cause, the want of the proper soil. In some portions of the State we meet with very extensive groups and masses of Azaleas, and Rhododendrons, but so far no one has succeeded in cultivating them with any success outside of the districts where they grow wild. This matter requires explanation and some new efforts on the part of our nurserymen and gardeners, to bring them under cultivation. The same may be said with regard to the Calycanthus, which grows very luxuriantty by the side of the various river-banks of California, but does not seem to flower in San Francisco and its vicinity.

Although our San Francisco climate is adverse to the cultivation of these very desirable p'ants, the list of flowering shrubs adapted to it is far greater and more varied than that of any other locality of the same latitude. It is also worthy of notice, that many of the flowering shrubs cultivated here, continue in bloom for a much longer period than is usual in other climates. This fact is principally attributable to our moderate temperature, which keeps our shrubs in constant growth and development.

We have also frequently noticed that the flowers themselves, remain perfect and fresh much longer than in the East, where the scorching sun causes the Roses to drop their leaves before they are fairly opened.

We shall now enumerate a number of flowering shrubs which deserve a place in every garden, and which are known to grow here to perfection :—

Diosma alba.—This plant is not generally known among our amateurs, or it would certainly be cultivated much more extensively. It is an evergreen with delicate foliage and graceful habit; its small white flowers are very numerous. The foliage as well as the flowers are exquisitely fragrant, particularly so when the branches of the plant are moved or shaken. Foliage as well as flowers are exceedingly pretty for bouquets. The *Dios-*

ma alba flowers here out of doors during the winter months, and continues in bloom during spring and summer. It attains a height of from two to four feet, and may be trimmed into any shape and style. It is easily propagated by planting the young shoots in sand, under glass, and keeping them shaded for a time in a warm situation.

Plumbago, bears flowers in clusters of a beautiful blue, and is in bloom during the whole year. It is an evergreen, and may be used as a climber, but we prefer seeing it cultivated as a shrub. The flowers are not fragrant but very desirable for their fine blue color. The Plumbago is propagated by cuttings under glass, which, however, do not strike very readily, as they are apt to turn black before making roots. This shrub grows very luxuriantly in and about San Francisco.

Polygala, an evergreen flowering shrub of great merit. Its foliage is pale green, and its flowers of a light purple. During the entire winter and summer this shrub is literally covered with flowers, but particularly so during our winters. It may be trimmed into any shape and at any time. Undoubtedly it would make a beautiful ornamental hedge. The Polygala is propagated by cuttings of the young wood, and strikes root readily if placed under glass in clean sand, and in a moderately warm situation; care must be taken, however, to keep the cuttings free from insects and the soil well drained. Too much moisture will cause them to rot.

Deutzia, is one of the prettiest deciduous flowering shrubs we have. It is a native of Japan, but has been cultivated in the United States and Europe for many years. Its flowers are of a pure white in the shape of little bells. Although it has no fragrance, yet its graceful habit and purity of color make amends for it. It flowers in the early part of spring, but may be easily forced under glass. The best known varieties are *D. gracilis* and *D. scabra*. They are propagated by cuttings, offshoots, or by dividing the roots; are easily transplanted, and grow well under ordinary treatment.

Laurstinus, is so well known here that no description is required from us. Many refuse to cultivate this shrub because "it is common," as they say. We do not justify the discarding of any class of plants on this ground. If a plant merits extensive cultivation, and our climate is well adapted for its successful growth, it should be one of our favorites. The Laurstinus deserves a very extensive cultivation. It flowers with us at all times, and is an evergreen. It may be trimmed into any shape, and its propagation is very easy. It may be grown by cuttings, like the Polygala and others, or by layers. It makes an excellent ornamental hedge, and its white swanlike flowers are very extensively and advantageously used for bouquets and other floral decorations.

Lilac, of which the blue, white and Persian varieties are known here, is an old favorite shrub, but we have frequently noticed that it does not bloom so freely with us in San Francisco, as we have had the pleasure of seeing it in Europe and in the East. The Persian Lilac flowers much better than the others, but we prefer the purple and white on account of the fragrance of their flowers, which are much larger than those of the Persian. Give them a warm and somewhat protected situation, and they will both thrive and bloom well. Suckers should be broken off whenever they appear near the stock on the surface, as they draw away much of the strength of the plant which would otherwise develop itself in flowers. The Lilacs are easily propagated from cuttings, which may be planted in the open ground where there is sufficient moisture for vegetation; also from the suckers which come from the roots, and which will grow readily and forthwith, having mostly a few roots, when taken off the parent plant.

Spiraea (Bridal Wreath), is another victim of bad taste and unjustifiable prejudice. Many hesitate to cultivate it, because they consider it common. The Spiraeas, and particularly the double flowering, deserve a conspicuous place in every collection of flowering plants. They flower early in spring, be-

fore the leaves are fairly developed, and their stems are completely covered with white flowers. Their appearance is graceful, and with a great deal of propriety they have been called the Bridal Wreath. They are of easy cultivation and are satisfied with almost any kind of soil. They are propagated without any trouble from cuttings or by division of the roots, which are easily transplanted. They grow from two to four feet in height. The most favorite varieties are, *S. Douglassii, prunifolia* and *rosea.*

Philadelphus grandiflorus (Mock Orange), a very remarkable shrub, robust in growth, in bloom here for several months. This shrub will thrive well in any kind of garden soil, and grows to a considerable height; we have seen it covering large arbors and garden frames. Its flowers are very fragrant, and it is said by some, that the perfume will produce headache when inhaled in excess. Strangely enough, the flowers here are much less fragrant than they are in the older countries. It is easily cultivated and propagated, and we should like to see it in every garden. It requires about the same treatment as Lilacs and Deutzias.

Bouvardia, is a most exquisite flowering shrub, and we are sorry to say it has been exclusively cultivated as a greenhouse plant on this coast, when no doubt can be entertained that it is well adapted for open air cultivation. The colors of the flower are white, pink, rose and deep red, and of a waxy appearance. In the open air it flowers during the whole year, and makes a bushy, compact growing shrub, while under glass it will always grow spindling and rarely flowers. We do not know of any specimens growing out of doors, but we hope to see it so treated. One reason for this is, probably, that the Bouvardias are very little known here except to our nurserymen and florists, who keep only a small stock on hand, as there seems to be no sale for them. Once introduced properly into our gardens, the Bouvardias cannot fail to become popular. The best and surest mode of propagation, is by cutting up the roots of the plants in small pieces a quarter to half an inch in length, each one of which will form a new plant in course of a month or two, if covered with light soil to the depth of about one fourth of an inch and placed close under glass in a warm situation.

In one of our next numbers we shall conclude our descriptive list of flowering plants, which comprises the most noteworthy species.

TIMBER TREES.

[Continued from page 327, of last number.]

Miscellaneous Trees, not Coniferous.

Acacia decurrens Willd. *(A. mollissima A. dealbata.)*

The Black Wattle or Silver Wattle. From the eastern part of S. Australia, through Victoria and N. S. Wales, to the southern part of Queensland, in open plains a small or middle sized tree, in deep forest recesses a lofty tree, of singularly rapid growth. Its wood can be used for staves and many other purposes, but its chief use would be to afford the first shelter, in treeless localities, for raising forests. Its bark, rich in tannin, and its gum, not dissimilar to Gum Arabic, render this tree also important. Other quick growing trees, useful in various ways, growing in any soil and enduring drought, can be used simultaneously, by mere dissemination, in ploughed ground, for dense temporary belts of shelter, or for quick yielding fuel plantations, such as *Acacia pycnantha, A. lophantha, Casuarina quadrivalvis, C. suberosa, Eucalyptus melliodora, E. viminalis,* and many other Eucalypts, all easily growing from seed.

[The *Acacia decurrens* thrives well on the Pacific coast, and besides being a useful tree, is a beautifully ornamental one. Many specimens are growing in our gardens around the Bay.—Ed.]

Acacia homalophylla.

The Victorian Myall, extending into the deserts of N. S. Wales. The dark brown wood is much sought for turner's work on

account of its solidity and fragrance; perhaps its most extensive use is in the manufacture of tobacco pipes. Never a tall tree.

Acacia melanoxylon.

The well known Blackwood of our river flats and moist forest valleys, passing also under the inappropriate name of Lightwood. In irrigated valleys of deep soil the tree will attain a height of eighty feet, with a stem several feet in diameter. The wood is most valuable for furniture, railway carriages, boat-building, casks, billiard tables, pianofortes (for sound-boards and actions), and numerous other purposes. The fine-grained wood is cut into veneers. It takes a fine polish, and is considered equal to the best Walnut. Our best wood for bending under steam. For further details, refer to the volumes of the Exhibitions of 1862 and 1867.

[The last two Acacias are very scarce with us yet, but they will also thrive well in our climate.

Mr. Mueller next refers to the different kinds of Maple trees, many of which are well adapted to the climate and soil of the Pacific coast.

Maples are desirable for various purposes; they furnish superior charcoal, and are used for fine furniture and musical instruments.

We select the following out of the list arranged by Dr. Mueller.—Ed.]:—

Acer campestre.

Extends from Middle Europe to North Asia. Height forty feet, in shelter and deep soil. The yellow and purple tints of its foliage in autumn render the tree then particularly beautiful. The wood is compact and fine-grained, and sought after for choice furniture. The tree can be trimmed for hedge growth. Comparatively quick of growth, and easily raised from seed. These remarks apply to almost all kinds of Maples.

Acer dasycarpum.

The Silver Maple of North America. Likes rather a warmer climate than the other American Maples, and is therefore particularly desirable for us here. Height fifty feet; wood pale and soft, stem sometimes nine feet in diameter.

Acer saccharinum.

One of the largest of the Maples. In the colder latitudes of North America, eighty feet high. Wood of rosy tinge, when knotty or curly, it furnishes the Birdseye and curly Maplewood. In the depth of winter the trees, when tapped, will yield the saccharine fluid, which is so extensively converted into Maple sugar, each tree yielding from two to four pounds a year. The trees can be tapped for very many years in succession, without injury. The Sugar Maple is rich in potash. Numerous other Maples exist, among which as the tallest, may be mentioned: *Acer Creticum*, L., of South Europe, forty feet; *A. lævigatum*, *A. sterculiaceum* and *A. villosam*, Wallich, of Nepal, fifty feet; *A. pictum*, Thunb, of Japan, thirty feet.

Æsculus hippocastanum.

Indigenous to Central Asia. One of the most showy of deciduous trees, more particularly when during Spring "it has reached the meridian of its glory, and stands forth in all the gorgeousness of leaves and blossoms." Height sixty feet. It will succeed in sandy soil on sheltered spots; the wood adapted for furniture; the seeds a food for various domestic animals; the bark a good tanning material. Three species occur in Japan, and several, but none of great height, in North America and South Asia.

Ailantus glandulosa.

S. E. Asia. A hardy deciduous tree, sixty feet high, of rather rapid growth, and of very imposing aspect in any landscape. Particularly valuable on account of its leaves, which afford food to a silkworm *(Bombyx Cynthia)*, peculiar to this tree; wood pale yellow, of silky lustre when planed, and therefore valued for joiners' work. In South Europe planted for avenues.

Alnus glutinosa.

The ordinary Alder. Throughout Europe and extra tropical Asia, seventy feet high; well adapted for river banks; wood soft and light, turning red, furnishing one of the best

charcoals for gunpowder; it is also durable under water, and adapted for turners' and joiners' work. *A. incana* Willd., is an equally high and allied species.

Amyris terebinthifolia.

Brazil. Is here perfectly hardy, and is content in dry ground without any irrigation. It proved one of the best among the smaller avenue trees, is beautifully spreading and umbrageous, and probably of medicinal value.

Angophora intermedia.

South East Australia. This is the best of the Angophoras, attaining a height of fifty feet, and growing with the rapidity of a Eucalyptus, but being more close and shady in its foliage. It would be one of our best trees to line public roads, and to afford shelter plantations.

[Of the last three varieties there are none cultivated on this coast, but we do not see why they should not be introduced here, as they seem to be well adapted to our climate.

Mr. Mueller next describes a number of varieties of *Betula* (Birch). We do not think favorably of them for cultivation here, and various trials of them have not been successful.—Ed.]

Castanea sativa.

The Sweet Chestnut Tree. South Europe and temperate Asia, as far as Japan, and a variety with smaller fruits extending to North America. It attains an enormous age; at Mt. Ætna an individual tree occurs with a stem two hundred and four feet in circumference. The wood is light and coarse-grained. The importance of the tree rests on its adaptability for shade plantations, its nutritious nuts and its timber value.

Casuarina glauca.

The Desert Sheoak, widely distributed through Australia, but nowhere in forest-like masses. This species attains, in favorable places, a height of eighty feet. Its hard durable wood is valuable. Important for its rapid growth, its resistance to exposure for shelter plantation, and a speedy supply of fuel, a remark which applies also to the following specie.

Casuarina quadrivalvis.

The Coast Sheoak of South-east Australia, not only lives in coast sand, but also on barren places up to the hills inland. Height to sixty feet. The male tree is very eligible for avenues, the foliage of the species being drooping. Cattle are fond of the foliage. For arresting the ingress of coast sand by belts of timber, this is one of the most important trees. It produces, like other Casuarinas, seeds early and copiously, and is easily raised.

[The Casuarinas seem to do well here under ordinary treatment. As ornamental trees they have been discarded by many of our gardeners, their habitus being not very satisfactory to their taste; but we saw some very fine and well grown specimens in the nurseries of Mr. Nolan, of Oakland, and we are satisfied that their cultivation should be encouraged.

We now come to the different varieties of the Eucalyptus; and as this tree is now so largely planted upon this coast, we feel justified in devoting considerable of our space to a description of the leading varieties, with special reference to their utility and adaptability to our climate.—Ed.]

Eucalyptus amygdalina.

In our sheltered, springy forest glens, not uncommonly attains a height of over four hundred feet. The stem is smooth and the leaves broad. Its seedlings also produce a foliage different from the ordinary *E. amygdalina*, occurring in more open country.

This species or variety, which might be called *Eucalyptus regnans*, represents the loftiest tree in British territory, and ranks next to the *Sequoia Wellingtonia* in size anywhere on the globe. The wood is fissile, well adapted for shingles, rails, for house-building, for the keelson and planking of ships, and other purposes. Labillardière's name applies ill to any of the forms of this species. Seedlings raised on rather barren ground near Melbourne have shown the same amaz-

ing rapidity of growth as those of the *Euc. globulus;* yet, like those of *Euc. obliqua*, they are not so easily satisfied with any soil.

Eucalyptus citriodora.

Queensland. It combines with the ordinary qualities of many Eucalypts the advantage of yielding from its leaves a rather large supply of volatile oil of excellent lemon-like fragrance.

Eucalyptus diversicolor.

The Karri of S. W. Australia. A colossal tree, exceptionally reaching to the height of four hundred feet, with a proportionate girth of the stem. The timber is excellent. Fair progress of growth is shown by the young trees, planted even in dry, exposed localities in Melbourne. The shady foliage and dense growth of the tree promise to render it one of our best for avenues. In its native localities it occupies fertile, rather humid valleys.

Eucalyptus globulus.

Blue Gum Tree of Victoria and Tasmania. This tree is of extremely rapid growth, and attains a height of four hundred feet, furnishing a first-class wood: ship-builders get keels of this timber one hundred and twenty feet long; besides this they use it extensively for planking and many other parts of the ship, and it is considered to be generally superior to American Rock Elm. A test of strength has been made between some Blue Gum, English Oak, and Indian Teak. The Blue Gum sustained fourteen pounds weight more than the Oak, and seventeen pounds four ounces more than Teak upon the square inch. Blue Gum wood, besides for ship-building, is very extensively used by carpenters for all kinds of out-door work, also for fence rails, railway sleepers (lasting about nine years), for shafts, and spokes of drays, and for a variety of other purposes.

Eucalyptus gomphocephala.

The Tooart of S. W. Australia; attains a height of fifty feet. The wood is close-grained, hard and not rending. It is used for ship-building, wheelwrights' work and other purposes of artisans.

Eucalyptus marginata.

The Jarrah, or Mahogany Tree of S. W. Australia, famed for its indestructible wood, which is attacked neither by Chelura nor Teredo nor Termites, and therefore so much sought for jetties and other structures exposed to sea-water, also for any underground work, and largely exported for railway sleepers. Vessels built of this timber have been enabled to do away with all copper-plating. It is very strong, close-grained, and of a slightly oily and resinous nature; it works well, makes a fine finish, and is by ship-builders here considered superior to either Oak, Teak, or indeed any other wood. The tree grows chiefly on iron-stone ranges. At Melbourne it is not quick of growth, if compared to our Blue Gum (*E. globulus*, Lab.) or to our Stringybark (*E. obliqua*, l'Her.), but it is likely to grow with celerity in our ranges.

Eucalyptus rostrata.

The Red Gum of Victoria, South Australia and many river flats in the interior of the Australian continent. Although a native tree of this colony, it has been introduced into this list on account of its wood being of extraordinary endurance under ground, and for this reason so highly valued for fence-posts, piles and railway sleepers; for the latter purpose it will last at least a dozen years, and, if well selected, much longer. It is also extensively used by ship-builders—for main stem, stern post, inner post, deadwood, floor timbers, futtocks, transomes, knight head, hawsepieces, cant, stern, quarter and fashion timber, bottom planks, breasthooks and riders, windlass, bowrails, etc. It should be steamed before it is worked for planking. Next to the Jarrah from West Australia, this is the best wood for resisting the attacks of sea-worms and white ants.

Eucalyptus sideroxylon.

Iron-bark Tree. Attains a height of one hundred feet and supplies a valuable timber, possessing great strength and hardness. It is much prized for its durability by carpenters, ship-builders, etc. It is largely employed

by wagon-builders for wheels and poles; by ship-builders for topsides, treenails, the rudder (stock), belaying pins, and for other purposes; it is also used by turners for rough work. This is considered the strongest wood in Australia. It is much recommended for railway sleepers and underground mining work.

[To be continued.]

A FEW NOTES

On certain Varieties of Fruits especially suitable for the Soil and Climate of California.

Longworth's Prolific Strawberry is evidently the favorite variety of this fruit, and is the sort most cultivated in this State. It is a a seedling which was raised, in 1848, by Mr. Schneicke, a tenant of the famous horticulturist and millionaire, Nicholas Longworth, at a station of the latter named the "Garden of Eden," only half a mile from Cincinnati. Its flowers are hermaphrodite, vines very hardy. Fruit, above medium to large, sometimes irregular in shape, but generally regular; flesh firm, bright red, sub-acid, rich, high, but not very delicate in flavor. Ripens in medium season. For market culture it is very valuable, being immensely productive.

Red Astrachan.—An Apple of extraordinary beauty, first imported into England with the White Astrachan, from Sweden, in 1816. It bears abundantly in this State, and generally well in other climates suitable for the Apple, and its singular richness of color is heightened by an exquisite bloom on the surface of the fruit, like that of a plum. It is one of the handsomest dessert fruits, and its quality is good, but if not taken from the tree as soon as ripe, it is liable to become mealy. It ripens here about May or June. It is pretty large, rather above the middle size. Skin almost entirely covered with deep crimson. The first crop comes in, in April; the second crop, this year, did not come in until August; the third crop, in October.

Seckel Pear.—This is—unfortunately for its very ready sale—a small fruit, especially when too many are allowed to remain on the tree; but owing to this American fruit being one of the richest, if not the very richest flavored variety known, it is beginning to be duly appreciated by the public. The *Belle de Flandres*, or Flemish Beauty, approaches as nearly to it as any pear in sweetness, richness and great juiciness. It is, too, about the healthiest and hardiest of all pear trees, although these qualities are not found to be so important in this mild climate as in the East.

The Seckel originated on the farm of Mr. Seckel, about four miles from Philadelphia. If the fruit is properly thinned out in rich soils in California, the size of this Pear becomes quite respectable; but this is rarely the case, owing to the labor in thinning costing too much in the opinion of most cultivators, particularly if they are rather distant from good markets. Season: from August to October.

Green Gage Plum, or *Reine Claude.*—This unequaled fruit I find as yet but very sparsely cultivated here—I mean the genuine article. There are other plums raised under the same name, or offered for it on the stalls, but almost as far from it in high, preserve-like flavor as the Crab-apple is from a Newtown Pippin. This fruit is universally admitted to hold the first rank in flavor among all plums, and is in every land where grown, highly esteemed. It is said to have been introduced into France by Queen Claude, wife of Francis I. During the last century, an English family by the name of *Gage* obtained a number of fruit trees from the monks of Chartreuse, near Paris. It is rather a slow growing tree comparatively, even in this fast growing climate. It is an abundant and pretty regular bearer. I have not found it to crack in this dry country. Fruit round and rather small, but here, when in suitable soil and aspect, it is often of nearly medium size. Skin darkish green, or only slightly yellowish at full maturity, when it is generally dotted or blotched with brown-reddish spots or blushes next the sun—suture faintly marked. Flesh pale green, exceedingly melting and juicy, and separates well from the stone. Flavor at

once sprightly and very luscious. Ripe about July and August. The finest specimens I have met with were at Mr. Thompson's orchards, at Suscol, Napa County. There are several seedling varieties of this plum, but none that I have met with equal to the old. I strongly recommend fruit cultivators to give considerable attention to this unequaled fruit, and the discriminating public will not be slow to appreciate its worth, as with the Seckel Pear. This plum rejoices (if it can be any matter of gratulation) in numerous synonymes, among sixteen of these: Bruyn Gage, Reine Claude, Grosse Reine, Damas Vert, Vert Bonne, Sucren Vert, etc., indicating its great value.

Napoleon Bigarreau Cherry, or generally, here, called Royal Anne, is one of the finest of the firm-fleshed cherries; very large, well flavored, handsome, and wonderfully productive even in this prolific country. It was introduced into the United States from Holland by the late Andrew Parmentier, of Brooklyn, N. Y. Fruit of the largest size, sometimes three inches in circumference; very regularly heart-shaped, a little inclining to oblong. Skin pale yellow, becoming amber in the shade, richly dotted and spotted with very deep red, and with a fine marbled dark crimson cheek. Flesh very firm, (almost too much so,) juicy, with an excellent flavor. Ripens about June, and is a good, constant and immense bearer, as was proved by a most astonishing specimen of fruitfulness shown at the Industrial Exhibition, in the Department of the Bay District Horticultural Society. This cherry is firmer in texture than the *Bigarreau* or *Couleur de Chair*.

Madaline or *Madeleine* Pear, or *Citron des Carmes*.—I first tasted fine specimens of this most refreshing and excellent of early pears at the Suscol Orchards, about forty miles from this city. It seems to me to be much the best at the time of its ripening—before the Bloodgood, and especially before some of the early abortions called pears. It takes its name from its being in perfection, in France, at the Feast of St. Madeleine. It is called, also, *Citron des Carmes*, from its being first cultivated by the Carmelite monks. It richly deserves a place in all collections. The tree is fruitful and vigorous, with long erect olive-colored branches. Its size is medium, obovate, but tapering gradually to the stalk. Skin smooth, pale yellowish-green. Season, early in June to last of July.

Easter Buerre Pear.—Now, for a good winter and excellent keeping pear, this is one to bear company with the Glout Morceau and Winter Nelis, and I rather give the preference, for size and flavor, to the Easter B. It is, at any rate, certainly, one of the best late winter or spring Pears. In this moderately warm climate it seems to arrive at full perfection, the Eastern States being rather too cold for it. If packed away in boxes with sawdust, and ripened off gradually in a cool temperature, it is a delicious, melting, buttery fruit with even a tender skin. It grows well, as a standard, trained to a good height and breadth. Fruit large, roundish-obovate, often rather square in figure. Skin yellowish-green, sprinkled with many russety dots, and some russet, which give it a brownish cheek in most specimens. Flesh white, fine grained, very buttery, melting and juicy, with a sweet and rich flavor. The Glout Morceau is very rich, but does not keep so long. The Winter Nelis, also, is sweet and juicy, but does not last like the Easter B. so long into the spring.

E. J. Hooper.

How to Destroy Ants.—It is said of old that "in the multitude of counsel there is wisdom." While disavowing any pretensions to be considered a wiseacre, or any wish to disparage the methods suggested by other correspondents for destroying these pests, permit me to recommend to any one so troubled to lightly dust their haunts with the best Peruvian guano, dried, and finely powdered—they seem to shun it as they would a pestilence. I have repeatedly adopted this method, and have recommended it to others, always with satisfactory results.—*Geo. Neville, Gr. Leigham Court, Streatham Hill, S. W.*

ORNAMENTAL AND LANDSCAPE GARDENING.

SECTION XII.

The pleasure grounds of that class of residence, which we have now under consideration, may extend over the entire enclosure, where there is no other object desired than the cultivation of flowers, shrubs and trees, but when with the enjoyment of country life other purposes are sought for, such as the cultivation of fruits and vegetables, the raising of poultry, etc. etc., the ornamental grounds must necessarily be circumscribed to that portion which immediately surrounds the lawn, reserving the land in the rear for outhouses, kitchen-garden and orchards.

This rule is of general character; in many cases it may become necessary to deviate from it; all will depend upon the nature of the ground, and upon the expense families may be willing to incur for ornamental purposes.

We will now go into details, and endeavor to furnish our readers with our own experience, and that of many eminent landscape gardeners in laying out, planting and embellishing grounds of the extent of from one to two acres. In doing so, we shall first treat of the

Approach road, respecting which, Louden says: "The approach road, next to the house and offices, is one of the most important features of a place, not only on account of its uses, but because it is that, by which an impression, favorable or unfavorable, is first made on a stranger."

Many mistakes are made in fixing the course of the approach road, and the road is frequently in direct antagonism to that which was intended. We have seen approach roads traversing the most frequented and most attractive portions of the ornamental grounds before reaching the house, and again, we have seen them constructed, so as to keep constantly within sight of the residence. These are mistakes, and contrary in principle to our rules of landscape gardening. We hold, that the approach road should form the margin of the ornamental grounds, covered by undulations of the surface, and by the growth of trees and shrubs, in such a manner, as to confine the view to the immediate surroundings, and to conceal the most prominent features of the grounds from first sight.

The approach road, should enter at right angles, or nearly so, with the enclosure or public road, and its length should be as much as possible, the direct distance between the entrance to the grounds, and the entrance to the house, making allowance for graceful curves, which are necessitated by the undulations of the surface, or by other obstacles. The road should be on a gradual rise, if possible, all the way, as we have stated on several previous occasions, unless the undulations of the surface make a slight descent necessary.

Cases have come under our observation, where approach roads were lined with single or double rows of trees. It is not neccssary, we believe, to say, that this is altogether out of taste. Such planting is well adapted for public roads, or long drives, but it will never do for approach roads within the enclosure.

The approach road should arrive alongside of the porch, having the front door to the left. This will enable ladies to alight from the carriage within cover of the house. The road should merge into the return road, or may pass on the opposite side of the house, where it may lead through dense groups of shrubs and trees, to the stable or carriage house. A proper width for the carriage road is sixteen feet; this may appear an extreme width, but we insist, that much of the appearance and dignity of a country residence depends upon the width of the drives and walks.

The surface of the road should be on a level with the grounds, over which it passes; never will it be justifiable to raise the road above the level, or to form embankments, or make cuttings through the rising ground.

The planting of trees and shrubs along the approach road, is also important. Where no direct necessity exists for curves in the road, the planting and growing of shrubs

and trees is needed, to create plausible reasons why curves should be formed. But this is not all. We have stated before, that the approach should form part of the ornamental grounds, and for this reason, the grouping should be planned in such a way, as to form the foreground or margin to the ornamental grounds and surrounding scenery. By such arrangement, the approach will be most pleasing to the eye of the visitor, and the first impression will be favorable, and not likely to cause disappointment.

There is nothing further left for us to consider but the material out of which the road should be constructed. This depends, to a great extent, upon the resources near at hand. The road must be hard, durable and smooth. Any stone, which is easily broken, will answer for a road bed, but for the surface, material is needed which will grind up into powder, and which will give a clean appearance. Broken slate, passed through a quarter inch screen, or ordinary gravel, will answer best. In many localities, in this State, beds of gravel are found mixed with a small percentage of cement; if properly screened, this forms a most compact and smooth surface.

While the approach road forms a necessary portion of the surroundings of a country residence, and while its proper management is indicative of the stye and manner in which the ornamental grounds and the house itself are arranged, it forms but a subordinate feature to the

Ornamental Grounds, which are the next subject for consideration.

The ornamental grounds of a third-rate, suburban, or country residence, are of an extent to admit a number of walks, lawns, flower-beds, groups of trees and shrubs, single specimen plants, and other embellishments which may be introduced, in accordance with the means at hand.

Walks are necessary structures for comfort, but their real design, is to bring us within sight of the various points of interest, which form the attractions of the place. If a walk is constructed merely for the purpose of having a walk, or if a bend is made in order to avoid a straight line, it shows an absolute disregard for Nature's laws. What we have said in this connection, with regard to the approach, applies with equal force to the walks. They should be formed apparently, to touch, and to bring us in contact with points of interest, which may be artificial or natural; and if curves are needed, obstructions must be made to appear, if they do not already exist in nature. Walks are necessary, but unless they are justified, we should do without them.

The greatest fault we find in most of our gardens here, is the endless number of walks by which lawns are cut up into small strips, offensive to the observer.

In our next, we shall lay down some rules for the formation of walks.

POPUAR BOTANY.

CHAPTER XII.

In our descriptions thus far of plant life, we have confined ourselves to its development and growth; but we now come to consider a new phenomenon that gives rise to new organs, the production of which round out the circle and complete the work of vegetable life. These organs are those of reproduction, and the phenomenon is that of flowering.

All plants have certain definite periods for coming into flower, determined by the class to which they belong. In annuals, this process commences a short time after their development from the seed, and as the plant has no reserve of sap, (the process being an exhaustive one,) it dies by the time the seeds are ripened. In biennials, flowering does not take place until the second year, when the stored-up sap of the previous year is consumed and the plant perishes. Perennials on the other hand, do not bear flowers for a long period, (in some several years being required,) or, when the plants are well established, and thus enabled to stand this exhaustive process without injury to themselves.

The mode of arrangement of flowers upon their stems or branches, is termed *inflorescence;* the simplest kind of which is a single flower, that is to say, where the flower-stalk or *peduncle*, as it is called, is tipped by a solitary flower. All flowers are not placed upon a peduncle, but many are found springing directly from the flower-stalk, in which case they are said to be *sessile*. Where flowers are developed in the axils of leaves, (their points of attachment to the stem or stalk,) the main stem is then called the peduncle, and included in the inflorescence, while each separate stalk which bears a flower, is called a *pedicel;* the leaves of the plant out of which this pedicel arises being termed *bracts.*

The production of a single flower in the axil of each leaf, (supported on a pedicel,) while the main stem continues to elongate, forms what is called a *raceme*, an example of which can be found in the Currant. *Corymbs* and *umbels* are but modified forms of a raceme. In the first, we find the lowest pedicels so elongated as to place their flowers on a level, or nearly so, with the upper ones; while in the second, the pedicels all arise from one point, forming a cluster of flowers which in outline might be compared to a bell-glass with its mouth turned upwards. Examples of this form are seen in the Primula, Water Hemlock, etc.

As said in the first part of this chapter, all flowers are not placed upon pedicels, but are often found springing directly from the flower stem; yet here, the system is much the same as in former cases, a *spike* being but a raceme with the flowers sessile, or in other words without proper stalks. When a spike is enclosed by a large bract, or enveloping leaf, such as is seen in the common *Calla* in our gardens, it is termed a *spadix*. *Catkins* (of which the Willow and Poplar furnish examples) are a kind of spike having small scaly bracts, which are produced so close together as to make a continuous mass of flowers and bracts along the entire length of the peduncle.

As the three forms of inflorescence just named, might be said to be but modifications of a raceme, so do we find the corymbs and umbels modified by what is called the *capitulum*, or head, a term given to a round cluster of sessile flowers, which is formed by the absence, or nearly so, of the pedicels to be found in the umbel or corymb. In this case, the point in the head from whence the flowers arise, is termed the receptacle. The capitulum being flat, or slightly depressed, allows a large number of flowers to stand on its surface, as we see in the Sunflower, and many other plants of this class, which have from early times been called *Compound flowers.*

The forms of inflorescence, so far described, are but simple ones, and where only a single flower has been developed from a lateral bud. But, as the flower stalks may divide just as the several stems or branches of a plant do, there necessarily results a form of compound inflorescence. Thus, a raceme may become compound by being elongated, and giving off other flowers, similarly arranged as the first, or where the branching is irregular, a *panicle* is formed. This panicle, may also become compound, having the form of a pyramid with contracted base, and it is then called a *thyrsus*, a form of inflorescence which we see in the Grape, Lilac, etc.

We have also, compound corymbs, and compound umbels, which the reader will understand as modified forms of the primary ones. These are the principle forms of inflorescence—all others being but modifications of them.

We shall now take up the flower itself, and endeavor to explain the different parts and their relations to one another. Flowers are divided into two parts; first, the exterior or envelopes, and second, the interior or seed-bearing organs. The envelopes are also divided into two sorts, the lower and outer one of which, is termed the *calyx*, and is generally of the same green color as the leaf of the plant. The second or inner row, is of various colors, being of delicate texture, and unlike in appearance to any other part of the plant; it is called the *corolla*, the several parts or leaves of which, are termed *petals*, the same divisions in the calyx

being called *sepals*. The inner organs are also divided into twos, and are placed in two rows, the outer of which are the *stamens*, and the inner the *pistils*. A stamen is made up of a column which is termed the *filament*, having on its summit a small round body *(anther)* containing a substance in a fine powder called *pollen*. Pistils are divided into three parts, viz: The *ovary*, which is a hollow receptacle containing the *ovules*, which are destined to become seeds; *styles*, prolongations of the apex of the ovary, and the *stigma*, which terminates the style in a round blunt point.

CYCLAMEN.

As winter flowering-plants for garden or window culture, there are few which are more deserving than Cyclamens.

In the East and Europe, their flowering season is during the Spring; but with us, they begin to flower in the Fall of the year, and continue to bloom freely during the entire Winter, in fact, they seem to rest but very little here, our climate being favorable to a continuous flowering. As, however, the Cyclamen is a bulbous root it should have its rest, as the plant will certainly be exhausted in the course of two or three years if kept in constant vegetation; and we are not surprised to hear so frequently of the loss of plants. In the old country, Cyclamens are transplanted every year. After a season of rest, plants treated in this way are in good condition for many years, and show much more vigor.

While some florists plant the bulbs deep, so as to cover the entire root with earth, we know of others who plant them so that one half of the bulb remains above the surface of the ground. Planting them above ground, has the advantage of keeping the crown of the bulb free from moisture, which is often the cause of decay. Experience, however, has shown that bulbs grown in their native soil, do better if planted deep, while bulbs raised from seed and under a state of cultivation do better by being planted partly above ground.

The most popular variety is the *C. Persicum*, of which there are several shades and colors: white, with a pink center; entirely white; spotted with pink; a delicate purple, etc. etc.

They are easily raised from seed, if a little patience is exercised. The seed often lies in the ground for months before germination takes place. The young plants will do much better by being often transplanted, and if properly treated, they will flower in the second year.

The following method for propagation has also been used successfully.

The leaves with the stem, are carefully removed from the bulb, so that a very small portion of the bulb remains on the leaf stalks. These are planted out in pots or boxes, which should be placed close under glass in a moderately warm house. These offsets, as we may call them, will make good flowering bulbs in the following year.

The bulbs may also be divided, but this method is objectionable, as the bulb will never be perfect, and always apt to decay. After the flowering season, the bulbs should be taken up and covered with soil, which should be kept moderately dry, yet sufficient moisture must be given to prevent the bulb from shrinking or drying up. In the Fall of the year, they should be planted in pots and kept in a very shady or even dark place, giving water sparingly, until the roots have again established themselves properly in the new soil. When the first leaves make their appearance give them more light and water, and from the time when they begin to show their flower-buds, frequent watering is beneficial, although the soil should be of a porous nature and well drained. Standing water is very injurious.

Tea-Seed from Japan.—W. W. Hollister, of Santa Barbara, California, has received fifteen to twenty bushels of Tea-Seed, from Japan, to plant on his farm near Santa Barbara.

WORK FOR NOVEMBER.

The rainy season is fast approaching, and as many have suffered during the past season through neglecting to plant early, we have every reason to believe that their sad experience has made our cultivators wiser, we therefore anticipate active preparation for early planting.

The fruit crops are gathered in, with the exception of the very late Winter fruit in the foothills, which will improve by letting it remain upon the trees as long as possible.

Wherever the Grape crop has been an unusually large one, the harvesting has not been entirely completed during the past month, and much work is still on hand in making wine and storing it.

In most parts of the State, the young wood, both of vines and fruit trees is sufficiently hardened to permit pruning, and we advise that this work be done at the earliest opportunity. After pruning, and as soon as the first rain has come, the ground of orchards and vineyards should be thoroughly plowed.

In the pruning of fruit trees, we frequently observe that serious mistakes are made in attempting to give trees a uniform shape. If this were practicable, we would be very much in favor of it; but when we take into consideration that the character of one Apple tree differs as much from another variety, as the Oak does from the Weeping Willow, it will at once be very apparent, that by pruning, a uniformity of growth cannot be established. While one variety of Apples has a tendency to an upright growth, we find another which spreads, and still another which grows weeping. To preserve the character of a tree, must be the object of pruning, and the operator, therefore, requires to be a man who understands something about it.

While some neglect pruning entirely, and permit their orchards to go to ruin, we have met with others, who prune too much. In regard to this, we would say that young trees, particularly after transplanting, should be cut back considerably, in order to give them strength, body and shape, but after they have once commenced bearing fair crops, less and less pruning should be resorted to every year. Trees which are in bearing condition, should be kept clean of suckers and water-shoots, and such branches only should be cut out, which interfere with each other. This applies principally to Apple and Pear trees.

Cherry trees need but very little pruning, except to keep them clean from suckers, and to cut away the chafing branches.

We may say the same about Nut trees, and would advise our readers not to cut off the tops of young trees, as many do very erroneously.

Peach trees should receive severe pruning every year, but we object to the cutting away of some of the largest limbs merely for the purpose of reducing the size of the tree. The young wood should be cut back about half or two-thirds of its length.

In the kitchen garden, little remains to be done until the rain comes. Cabbage, Cauliflower and Tomatoes, may be sown in frames for early planting. As soon as the first rains come, prepare some ground for Lettuce, Onions, Radishes, etc., which will readily grow in climates similar to that of San Francisco. Asparagus beds should receive early attention; the beds should be cleaned and spaded to the depth of from eight to ten inches.

Early Peas may be planted very successfully.

The flower garden has its worst time during November; flowers are very scarce, and florists have difficulty in procuring sufficient for their business. Shrubs and trees should receive a thorough pruning. After the first rain the ground should receive a good top-dressing of manure, and subsequently, a thorough spading. Whatever is to be transplanted, should be done now. Dahlias are better out of the ground and stored away in a dry, cool room.

Greenhouse-plants should be watered carefully. Gardeners are apt to give too much water during the Fall and Winter months.

Cinerarias, Cyclamens and Chinese Primroses, should receive the attention of florists in order to have them in bloom at the begin-

ning of January. The best place for them is close under glass. Cinerarias may have plenty of water, if a warm and sunny exposure can be given. Primroses and Cyclamens do better in a partly shaded place.

Camellias require an abundance of water as their flowering season approaches.

All kinds of seeds of greenhouse-plants and evergreens, may be sown in boxes and pots as soon as they ripen. It is much better for the seeds to be in the ground than to lie upon the shelves, especially as without resorting to artificial heat, the Autumn and Winter months with us, are generally more favorable for the germinating of seeds under glass.

Hyacinths can be safely planted for greenhouse and window culture. After potting, place them in a dark room for a week or two, and allow them to form roots before the leaves make their appearance.

The vines in Graperies must be kept very dry and airy.

PLANTING VINEYARDS.

There is nothing about Grape culture which requires so much careful attention as the planting of the vineyard.

First. The ground should always be plowed *twice*, and plowed deep. If there are any wet places in it, either an underground or surface drain should be made; the ground should first be plowed as soon as the rain falls, and the second time immediately before planting.

Second. If cuttings are used instead of roots, the holes should be made with a shovel for their insertion, and *the entire cutting should be covered up*. Planting Grape cuttings with a crowbar is simply barbarous. If the season is dry, not one in three of them will root; while if the ground is well prepared and holes are dug for them, at least eighty per cent. ought to grow. Nothing can be made by planting a vine yard hurriedly.

Third. The planting should be done early, so that the rains which fall after the planting, may settle the earth close about the cutting, which should be fresh from the vine, that is, recently pruned; and from the time of its removal from the parent stock until it is planted, it should be kept in a moist place or completely covered up with straw or earth. It is true that cuttings, although dried and withered by the sun and atmosphere, will *sometimes grow;* yet, as it is desirable to secure a *successful* growth of a vineyard, such experiment would prove dangerous. If the cuttings have been pruned for any length of time, they ought at least to be soaked in water one or two days before planting out. By doing this, the fine particles of earth cling around the bark and keep the external portion of the rod perfectly moist.

Fourth. Vines are usually planted from six to eight feet each way—from six to seven feet is the most advantageous distance. The question of distance, however, depends much upon the character of the soil. I would never plant vines eight feet apart; my experience is, that this is unnecessarily distant. The rows should of course be made straight, and small pins or stakes should be placed at each plant to indicate its locality, else by the first plowing the cutting may be disturbed, and most probably killed. It is an easy matter to cultivate Grapes when once started, but it is a difficult task to sufficiently impress upon the minds of vineyardists, and especially new beginners, the great necessity for careful planting. If the cutting is *entirely covered* up by earth—which *should always be done*, then from fifteen to eighteen inches is a sufficient length for the cuttings.

M. M. Estee.

Raising Apples and Pears in Dry Seasons. An eminent Pomologist in Brussels, De Johnghe, has succeeded in obtaining well-grown Apples and Pears in dry seasons by watering the trees from time to time, and by making holes in the ground underneath them and occasionally introducing some liquid, but not very highly concentrated, manure. This application is stated to be particularly important at the time when the fruit is setting.

REPORT ON THE FRUIT MARKET.

Although there are a few localities in the eastern portion of the States, where there are fruits grown with fine complexions, high color and of large size, yet these places are few compared with similarly favored localities in this State. A glance only, at any of our fruit stands, where the fruit is good and of many varieties and well arranged in the boxes or compartments, will convince any person who has had any experience in such matters, that for the liberal developments of nature in brilliant and splendid paintings, varied colors and grand effect, combined with magnitude of measurement, no fruit stores in any other part of the world can rival California in these respects. Indeed, so much is this the case, that many fruits cultivated in this region, can hardly be identified as the same varieties as those grown in the more easterly States.

What is the cause of this very striking difference between the products of California and those of the other States? The following may be assigned as some of the reasons: that in the Eastern States, there is a great fickleness of weather and temperature—the extremes of heat and of cold;—excessive rains, and sometimes great droughts;—in some years in the autumn, a favorable ripening of the wood, while in others this is incomplete; and at all times, the serious ravages and injuries of destructive and noxious insects, which disfigure the fruits and damage the trees themselves. Here, on the contrary, there is comparatively, uniform and equable climate and temperature. How much brightness of sunlight have we,—what a continuous and almost unchecked growth,—how few troublesome insects, and what a naturally rich and deep soil!—in short, as a writer in one of our agricultural papers observes: "California is one of the best growing countries in the world, and we really have no true standard by which to compare and test the names and qualities of our fruits." This year, all our fruits seem to have outshone themselves in beauty and lustre, and the products of Pomona, in our markets are, even for this region, unusually bright and pure in appearance, and from the greater number of varieties, especially of Apples, uncommonly gorgeous and attractive in their appearance.

The great abundance of Grapes in the market this month, is particularly noteworthy, and the unusually large size of bunches and berries, and the fine rich coloring, especially of the Flaming Tokay and Rose of Peru with some others, renders the display much more attractive than last year. The flavor of the Muscat of Alexandria, when fully ripe, is very luscious to the palate,—but, the general quality of the majority of the Grapes in market is rather inferior this season. The apples are, on the contrary, superior in both quality and appearance, the coolness of the summer having been much in their favor for both flavor and juiciness.

For the information of fruit raisers at a distance from this State, we will give a brief account of the time when the different fruits come in here. Strawberries, in general, appear about the beginning of June. Apricots in June and July. Peaches in the latter part of June and beginning of July; Figs the same; Plums, too, are then plentiful. Raspberries, Goosberries and Blackberries, about the beginning of July. In August, commences the melon season. Grapes from May to December and January.

Most of the vegetables may be said to be here all the year round. The last of the Blackberries came in on the 10th of this month (Oct.), at twenty cents per pound. In the season, they are from six to ten cents per pound.

The Imperatrice Plum is now in market, partially dried, and very sweet and well-flavored. The Beurré Clairgeau Pear is now in, and very large and beautifully colored, with a rich red next the sun. The later Pears are also on the stalls—and the Easter Beurré, Winter Nelis, Orange Bergamot and White Doyenne. with a remnant of Bartletts. Those coming in are: the Russet

Pear, President, and Glout Morceau. The Nelis is a little later than the above.

As to the vegetables, Asparagus has appeared,—the first of the season, and without rain! It sells now, from twenty-five to thirty cents per pound, in the height of the season from six to eight cents. I see also, yet in market: Gumbo, French Artichokes, Egg and Oyster Plants, with plenty of Green Peas and String Beans. E. J. Hooper.

BURSARIA SPINOSA.

This beautiful evergreen is a native of New Holland, and is classed in the order of *Pentandria. Monogynia, Pittosporaceæ.* It should by all means, be more generally cultivated by our nurserymen, but it seems to be very little known here by our gardeners. Its very beautiful and graceful spikes of pure white flowers, would be quite an addition to bouquets and flower baskets. So far, I have noticed but two plants in our gardens around San Francisco; one at Woodward's Gardens, which is now in bloom; and the other at Wm. Patterson's Nursery, on the San Bruno Road, which is now out of bloom, and has set a few trusses of well developed seeds. It can be grown from cuttings, by taking the half ripe wood, keeping them in a gentle heat under glass, when they will root in about from four to six weeks. The *Bursaria* is a hardy evergreen here, and would make a fine addition to our lawns and gardens. I have had twice, a small quantity of the seeds from Australia, but did not on either occasion succeed in raising them; they could not have been ripe, as, knowing the value of the plant, I took particular care of them. I should like to see this shrub extensively cultivated by our nurserymen, so that we would see a plant of it growing in every garden.

E. L. Reimer.

Onions.—Keep the ground free from weeds by frequent hoeing; be careful not to stir the soil very deep. Salt, sown broadcast at the rate of two or three bushels to the acre, is beneficial.

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Editorial Portfolio.

In a country like the United States, where the cultivation of the soil is the great interest, and the one upon which it must depend for a large measure of its permanent prosperity and wealth, it would be but reasonable to expect a large representation of the agricultural element in its legislative bodies.

Just as this conclusion is, yet it is very far from being the case, and we search in vain for evidences of a proper representation on the part of the farming interests. Year after year, our representatives are chosen from a certain restricted class, who seem to have made politics a profession, but for their own aggrandizement. They represent no one but themselves, and have come to look upon the Government and its offices, as existing only for their especial benefit.

While we admit the necessity for a certain number of lawyers and other professional men being selected to represent the people, we also claim, that it is equally necessary, that a like number of agriculturists, and those engaged in the industrial pursuits of the country, should likewise be chosen. As this has not been done, agriculture has been forced to occupy a false and subordinate position, instead of standing in her true and proper place.

This condition of things is wrong, and so long as it continues, agriculture and its kindred branches must languish. The remedy is in the hands of our farming population, if they will only view it in the right light, and use the proper exertions.

The benefits which will be derived from a larger representation of the cultivators of the soil, will not be confined to that class alone; such reform will have its influence over all the land, in the cities and towns as well as in the country districts. It will have

a moral effect upon the entire body politic, driving out in many cases, the professional politicians, and replacing them with honest and upright men. It will bring the hearty, vigorous life of the country into contact with the pent-up existencies of the city, and will pour into the channels of our Legislature a purer and less contaminated vitality.

But, to effect all this, farmers must rid themselves of the impressions, too common among them, that lawyers are necessary to legislate for them; and that the machinery of law is something in which they are but indirectly interested, and which has but little to do with their occupation. They must come to understand, that it needs no special education to state and ably to advocate the wants of a section of the country, or even the necessities of the entire nation, with regard to its agriculture, other than that which they already, and indeed alone possess.

Among our farming people, are to be found men of sound judgment, liberal ideas, large experience and superior scholarship, as well as among the other classes from whence so many of our legislators are selected.

Let our agriculturists, and those interested in the advancement of this interest, look well to this matter, and henceforth strive to attain their proper places in our legislative halls.

Already the subject is commanding attention in the Southern and Eastern States, and it should commend itself to California with special force. In this connection, we give the following extracts from an exchange upon the subject.

"The interests of agriculture are so immense and are so vitally connected with the welfare and prosperity of the whole country, that it is a matter of great surprise that so little attention has been given to it by our lawmakers generally. The impression appears to prevail largely amongst farmers that their interests and the interests of the community at large, can be best subserved by sending lawyers and other professional men to the Legislature. In pursuance of this idea, comparatively few farmers are selected, and as a natural result, agriculture has come to be regarded as a matter of secondary importance so far as legislation is concerned.

The sooner, therefore, that the cultivators of the soil take the position that they are, by virtue of numbers and in the magnitude of the interests involved in agriculture, entitled to a full and fair share of legislative representation, the better it will be for all parties. Let them agree to send as representatives, men of known practical ability and thorough integrity, and they can accomplish it without the least difficulty."

DARLINGTONIA CALIFORNICA.

We have read with a great deal of interest the notes on this much talked of plant, in a late number of the Pacific *Rural Press*. A Mr. Lemmon of Sierra Valley, presented to the *Press* a specimen of the Pitcher Plant, which was recently found at Black Hawk Creek, near Quincy, in Sierra County; and which, from its peculiar and different appearance from what has been heretofore described as the Californian Pitcher Plant, the *Press* pronounces to be a new species.

We have not seen the specimen in question, but from the cut before us, we must certainly consider it the same plant previously described, and which grows in Nevada County.

Mr. Lemmon pronounces it a new species, because its leaves are thirty inches long, while those of the previously exhibited specimens are only about ten inches. But we can assure that gentleman, from our own experience, that we have seen leaves of the same plant in Nevada County, fully thirty inches in length.

As we have not seen the flower, we cannot pass an opinion on it.

As far as the cultivation of the Pitcher Plant is concerned, we entirely differ from Mr. Lemmon, as to the difficulties. At Woodward's Gardens they did not grow, because they were treated as a hot house plant and did not receive proper soil; and not, as Mr.

Lemmon says, because the gardner there "could not produce the cold necessary."

The summers in Sierra County are much warmer than in San Francisco, and it is during the Summer months that the Pitcher Plants are in a developed state. All that this *Darlingtonia Californica* requires, is a strong black loam (or what is much better, peat) and any amount of moisture, and it will then thrive well in the open air.

LAKE TAHOE WATER COMPANY.

We have every reason to believe, that the Lake Tahoe Irrigation scheme will be carried out at no distant day. Colonel Von Schmidt proposes, to cut a tunnel through the Summit, about five miles in length. The immense expense of a work of such magnitude might have delayed the enterprise for many years, but fortunately, the Central Pacific Railroad Company, saw a great advantage in this Tunnel project, as it would lower the line nearly one thousand feet, and shorten their route considerably.

It is now believed, that both of these companies will act jointly, in cutting through the tunnel, and an early completion of the work is looked for.

We mention these facts, because we attach much importance to a good supply of water for irrigating purposes, and the sooner the work is completed the better. It is estimated, that the supply of water from this source will amount to nearly two hundred million gallons per day.

We hail this enterprise with delight, and hope that nothing will be left undone, to carry the work through at an early period.

A FLORAL CURIOSITY.

The Sacramento *Record* of late date says: "Some time ago Mrs. M. S. King, who resides on Seventh Street, between G. and H., noticed signs of life upon the withered remains of a dead rose. These signs were carefully watched, and presently they put forth a bud, then another, then a third. A few days ago these three buds blossomed into as many roses, and we have now in our office these three full-blown roses growing from amid the ashes of a former rose, from which, Phœnix-like, they have arisen."

RICE CULTURE IN CALIFORNIA.

The Sacramento *Bee* states that Rice culture has been successful in the swamp lands. In district No. 28, two persons planted a few acres in rice, last year, with results so encouraging as to induce them to greatly extend their enterprise this year. There is reason to believe, that this branch of production may be greatly enlarged in these swamp lands.

CRANBERRY CULTURE.

To many inquiries about the cultivation of the Cranberry on this coast, we may say that our dry lands and our dry climate are not favorable to its successful growth; yet we have many hundreds of acres of land, which are well adapted to its culture.

The Cranberry wants moist ground, and if land can be had where water is found within eighteen inches to two feet from the surface, it is so much the better. Along our river beds, and on lands which are subject to overflow in winter, Cranberries could be cultivated for profit with much success. The culture is easy and comparatively cheap.

There are several methods of planting Cranberry Vines; one is to cut the sod, which is soon formed by the vines, and set in rows about three feet apart each way. The plantation should be kept clean from weeds, for a year or two, until the vines cover the ground.

Another method is, to cut the vines into short pieces, sow them over the newly plowed land and harrow into the ground. These cuttings will soon strike root and form a sod, in the course of a year or two. If cultivated in this manner, the only way to keep the plantation clear of weeds, is by frequent

hoeing, while if planted in rows, the plow may be used to facilitate the work.

A third method, consists in planting the seed, which is not so certain, and takes longer time to produce a good sod.

The best varieties, are the Cape Cod, Black-Bell, Cherry and Bugle; the two first named, are better adapted for upland, while the latter do better in low lands. The Cherry and Bugle varieties, should be cultivated for profit upon low or overflowed lands, and the Cape Cod and Black-Bell are preferable for planting in gardens for family use.

We like to see the Cranberry cultivated in every garden, where room and plenty of water can be had; fresh Cranberries, are a great addition to the table, and are much more desirable than those we purchase at the markets, or in our grocery stores.

Also, for ornament, Cranberry vines are deserving of extensive cultivation. The Bell variety is adapted for pot culture; its growth is of a drooping nature, the foliage of a vivid green, and in addition to this, its delicate flowers and coral-like berries, make it a very desirable house-plant.

If cultivated in gardens, a place twelve feet square, will yield about two bushels of Cranberries a year.

If cultivated for profit, not much can be realized during the first three years, but after that, an annual yield of one hundred bushels to the acre, may be depended upon.

We would like to see enough of them cultivated for home consumption, and we are satisfied the business would prove to be a profitable one.

NEW AND RARE PLANTS.

Delphinium nudicaule.—This is a native of California, and although it deserves extensive cultivation, we do not see it in any of our gardens. Strong efforts are made in Europe and the East to introduce this *Delphinium*, while in its native state it is totally ignored.

Tilton's Journal of Horticulture speaks of it thus:

The Larkspurs *(Delphinium)*, hitherto cultivated in our gardens, have been in color confined to the different shades of blue, purple or white, but in the species now under notice we have a flower with sepals of orange red, the petals being yellow, which is not only valuable in itself, but will, doubtless, afford the means for the production of varieties of new and beautiful colors.

Mr. Guerineau, of the Botanial Gardens, at Harvard University, Cambridge, describes it thus: "It is a native of California, and I should call it a biennial, if not a perennial. It flowered all through the summer, and gave me sound seeds, which, being sown in the following autumn, came up very freely this spring, began to flower in June, and have continued in succession until now (July 25), for, after a stem has grown to perfection, several others start from the base and flower again, and so on. The old plant which flowered last year grew up again this spring from the slender, fleshy, tuberous roots, and continues to flower."

This would indicate that the *Delphinium nudicaule* will much improve under cultivation. In its native localities it flowers early in May, and by the latter part of June nothing of the plant is visible above the surface. The root then remains in a dormant state, and is so brittle that it can be pounded up into a fine powder. On applying water to its root a fizzing noise is plainly perceptible, and a few days afterwards the plant will show vegetation, if the ground is kept moist. This phenomenon we should like to see explained. If it is characteristic of plants in localities where no rain falls during the summer season, it will establish a theory which is not generally known to exist.

Adiantum Veitchii.—A distinct and fine fern, introduced from Peru. It is extremely ornamental, attracting the eye by its rigid character and the symmetry of its growth; and we recommend it as a most desirable evergreen fern for a warm greenhouse or intermediate stove. The young fronds are very beautiful, being of a fine red color: that of the mature fronds being of a pale green. The largest pinnules measure about an inch in their longer, and half an inch in their shorter

diameter, and are set stiffly on the plane of the fronds. The full-sized fronds attain an average length of one foot.—*Gardeners' Monthly.*

Begonia Chelsonii.—This is one of the finest of the flowering begonias. It is a hybrid, raised at Veitch's Nursery, between *B. Boliviensis* and *B. Sedeni*, both now so well known. It is very free in growth, and of good habit. The flowers are of a bright glossy red color, and of very large size. The plant continues in bloom from May to November. As a decorative plant it cannot fail to be most extensively grown, and it will form an excellent companion to the *B. Sedeni*, sent out last year. It has received first-class certificates, both at the Royal Horticultural Society's exhibitions and also at those of the Royal Botanic.—*Gardeners' Monthly.*

Croton Johannis.—The leaves attain a length of twenty to twenty-four inches, and are of a glossy green color, the center and margins being bright orange-yellow.

Croton multicolor. — The leaves attain a length of from seven to nine inches, are very irregular in shape, oblong, spathulate, tapering at the base and irregularly contracted in the center. The young leaves are of a light green, blotched with yellow, but turning with age on the upper surface into a glossy green, puckered, and irregularly blotched with yellow, reddish-yellow, and red, the midrib crimson, the secondary veins yellowish, the under surface being red.

Croton Hookerii.—Forms a handsome, compactly-growing shrub, with broadly-ovate lanceolate leaves, abruptly tapering or rounded at the base. The upper surface of the foliage is of a beautiful dark shining green, broken at the base with a broad blotch of golden yellow, and with irregular stripes of the same color running from the midrib towards the margin, the midrib being golden-yellow, as are also the young stems and leaf-stalks. All of the above crotons are from the South Sea Islands, and were discovered by Mr. J. G. Veitch.

Dracoena magnifica. — Is very free in growth, and the leaves, which have a spiral growth, attain a length of one and a half to two feet, and a width of eight to ten inches. They are of a beautiful bronzy pink color, changing when old into a somewhat darker shade. The leaf-stalks are nearly purple.

Dracoena perphyrophylla.—A South Sea Island species of noble habit, with bold, erect, broadly-oblong leaves, which are of a fine, deep, bronzy hue, and remarkable for the contrast presented by the glaucous hue of the under surface.—*Gardeners' Chronicle.*

EXPERIENCE WITH TOMATOES.

Much has been said about this most useful vegetable, and we believe, its proper cultivation is well understood and comparatively easy. In California, we have fresh Tomatoes in the market, about eight months in the year. Almost every year brings out new varieties, and for many it seems difficult to determine which particular ones should becultivated.

At present, we think the Trophy Tomato has no superior, and we support our opinion with the experience which the *Rural Carolinian* gives :

"It is claimed, that the Trophy is the earliest of all Tomatoes, but the best we can say of it in this respect, is, that it proved with us as early as any that we had on trial, several others ripening at the same time. In other respects, too much can hardly be said in its praise. It is unquestionably the largest, smoothest, most fleshy and heaviest of all the kinds yet introduced. The fruit on our vines of this variety, was at least a third larger than that on any other kind, many specimens weighing over a pound. The plants are productive, the fruit not inclined to rot, and the flavor excellent. It must, we think, take the place of all others as a market fruit."

To advance the growth of Tomato plants, and to insure a good crop, the *Journal of the Farm*, recommends the following treatment:

"To induce a rapid growth and full bearing, many of our largest growers are employing Baugh's Raw Bone Phosphate, and the results are highly satisfactory. This is particularly the case with several large canning

establishments located in the vicinity of New York. The usual plan of applying is, to furnish each plant with a small handful, mixed well with the earth, at transplanting time. After the plant is started, and while cultivating, let another small handful be scattered as a top dressing around each stalk. A very great improvemtent in size of fruit and smoothness of surface surely follows this application."

TROPICAL FRUITS AT LOS ANGELES.

The Los Angeles *Star* has received a ripe pineapple from Rev. Father McGill, which was raised on the grounds of the St. Vincent College in Los Angeles. The *Star* says that bananas and other tropical fruits are also thriving well on the same grounds.

NEW PUBLICATIONS.

EVERY WOMAN HER OWN FLOWER GARDENER: By Mrs. S. O. Johnson. This neat little volume has been laid before us, and we recommend it to those of our lady friends who take an interest in gardening. It contains 148 pages of practical instruction and advice for amateur gardeners. The price is only fifty cents. Cheap enough for everybody.

NEW CATALOGUES.

We have received the following Catalogues within the last month, and keep them filed at our office for inspection:

Niagara Nurseries.—Wholesale Trade List of Fruit and Ornamental Trees, for sale by E. Moody & Son, of Lockport, N. Y.

Wholesale Trade List of Plants, etc., offered for sale by George Such, of South Amboy, New Jersey.

Nursery Trade Catalogue of Frost & Co., Genessee Valley Nurseries, Rochester, New York.

Preliminary List of Tree Seeds; by Thomas Meehan, Germantown, Philadelphia, Pa.

Wholesale Trade List of Fruit and Ornamental Trees, etc.; by Sears, Henry & Co., Seneca Nurseries, Geneva, Ontario Co., N. Y.,

Wholesale Price List of Fruit and Ornamental Trees; by J. M. Jordan, St. Louis, Mo.

Wholesale Price List of Fruit and Ornamental Trees; by A. Bryant Jr., of Princeton, Illinois.

Price List of Fruit and Ornamental Trees, Vines, etc.; by William Parry, Pomona Fruit Farm and Nursery, Cinnaminson, N. J.

Catalogue of American Forest Trees, for sale by A. Battles, Girard, Pa.

Wholesale Catalogue of Fruit, Evergreen and Ornamental Trees, Shrubs and Greenhouse Plants, for sale by John Saul, Washington, D. C.

Correspondence.

SAN FRANCISCO, July 28, 1871.

Editor California Horticulturist:

DEAR SIR: Will you enlighten me on the subject of the blossoming and fructification of the fig? Although I have several growing in my garden, I have never been able to distinguish any semblance of a flower; yet they must blossom in some manner. I have heard a strange yarn among the Mexicans and other people of Spanish descent, in which is administered a marvelous admixture of demonology and diablerie, pointing out St. John's Night (Xmas. Eve) as the time of efflorescence.

The Virgin Mary, on her flight into Egypt with the infant Jesus, is said to have sheltered herself from the pursuit of the Jews beneath a fig-tree, and, in recompense for the shelter afforded, is said to have blessed the tree, and bestowed on it abundant fruitfulness, with the faculty of producing two crops every year, and also to have endowed the flower with a charm. On the night of St. John, at midnight, the fig-tree puts forth a single blossom — a large white flower, brilliantly phosphorescent. This fructifies the whole tree, and is itself possessed of a magical power. Whoever can obtain that flower acquires a charm which will assure him the possession of whatever he desires (a sort of Aladdin's lamp affair); but on this special occasion the fig-tree, "for this night only" is

guarded by reptiles of repulsive and horrible appearance—snakes, lizards, toads, etc., insects of enormous size and venomous properties, birds and animals of ill-omen; and these so effectually bar the way that it is not recorded that any one has obtained the flower, although some, it is said, have seen it. The guardian reptiles, etc., are only seen when an approach to the tree is attempted.

This fable I of course treat with ridicule, but I wish to rebut all this nonsense with a plain and straightforward statement of the actual mode of fructification of the fig-tree.

Yours, respectfully, S. C.

Editorial Gleanings.

The Cultivation of Small Fruits.—"The progress of small fruit culture in the United States is very encouraging, though it has not as yet reached anything like the perfection to which we hope and believe it will attain within the next twenty years. Not only should our city markets be bountifully supplied with the best fruits at moderate prices, but every farmer should have an ample supply for his own family. There is no more pleasant or healthful diet during the warm weather than well ripened fruits, and the only cause for surprise is, that our country farmers have not long since learned to know this fact, and turn it to advantage."—*Journal of the Farmer.*

Deterioration of Guano.—"The predictions which we have so often published in this journal relative to the deterioration, sooner or later, of the quality of the Chinchas Island (Peruvian) guano have been verified, and somewhat sooner than we had anticipated. About twelve years ago this variety of guano was a remarkably uniform composition, and when the relative proportions of its constituents did vary, it was generally the most valuable of them that preponderated over the others. Thus the average amount of ammonia (or the substance equivalent to that compound) was about sixteen per cent., but the proportion more frequently rose to eighteen per cent. than it sank to fourteen per cent. At this time there can be no doubt that Peruvian guano deservedly stood at the head of all natural and artificial manures. From the year 1855, or thereabout, there has been a very slow, but still sensible, diminution in the per centage of ammonia in Peruvian guano, until quite recently, when almost suddenly the composition of the recent imports has undergone a serious change. Specimens are still to be met with containing sixteen per cent. of ammonia, but they are rare; whilst on the other hand, in some samples, the amount of ammonia has fallen to less than ten per cent."—*Farmers' Gazette.*

Cotton Experiments in Yolo.—"On the unclaimed tule lands above the town of Knight's Landing, Mr. Charles F. Reed, President of the State Agricultural Society, last Spring planted about two acres of cotton, as an experiment. We learn that the seed was the Sea Island variety, and imported. It was supposed to be somewhat imperfect, as it did not germinate as evenly and quickly as was expected. However, a tolerably good stand was produced, and about one and one half of the two acres looks very promising. It is about three feet high. It commenced to bloom about the 10th of this month, and the balls are forming on the early bloom. The growth of the stock is very rapid, equal at present to two inches a day, and new blossoms are constantly making their appearance. Persons familiar with cotton growing pronounce the prospect very flattering, and believe this soil to be admirably adapted to the growth of this staple. This has not been a fair test of the adaptability of the land for this purpose, however, as the seed was not planted until the last week in May, and consequently, will not have time to mature the late bloom. Had it been planted a month earlier, the early bloom would now be ripe and ready to garner, and picking would continue until frost came. As it is, there will be a good yield of both cotton and seed.

The latter will be fresh for use next year, and we confidently believe the growing of cotton will prove a success on this class of lands, which heretofore have produced nothing, and were considered valueless."—*Woodland Democrat.*

Dried Fruit.—The ground in many of the orchards of California is covered with fruit which is permitted to lie and rot. It would be very easy to utilize this waste fruit by drying it for home consumption. We are now importers of dried fruit, which is not nearly so good as the specimen lots of the home-cured article we occasionally find offered for sale. Apples dried in California are worth more than the best imported varieties. The demand for the article is steady. Last year, on account of a scarcity, Eastern dried-fruits advanced materially in prices, which were maintained throughout the season. We observe that a merchant named Kennedy, in Chico, Butte County, offers the highest market prices for dried fruits, as an encouragement to the farmers of that region to go more extensively into the fruit-raising business. There would be little expense to farmers elsewhere in thus preserving their fruits, for which the market might be considered as assured at fair profits. We believe a fortune is in store for the individual who will dry fruit on an extensive scale in California."—*Morning Call.*

Tea Culture.—Hon. W. G. Howard writes to the Department of Agriculture as follows, from San Antonio, Texas: The culture of the plant and the manufacture of the tea is a much simpler and easier process than most persons think. Of the hardy nature of the plant you have abundant evidence in those planted out in the gardens at Washington. And from my own experience in many climates of India, from Arracan to the Himalaya Mountains, neither frost nor snow, drought nor rain, sunshine nor shadow, materially injure the "tea plant." Nor is it subject to the visitation of any worm, bug, or disease.

When I first went to India, all knowledge with respect to tea was very scant and limited, and everything had to be done by hand; but afterward, when the capital invested in tea had increased to enormous proportions—indeed, many millions of pounds sterling—the cost of manufacture was much reduced. When I left India the only manual labor was the picking of the leaves, which was best done by women and children. It is true that a man here would cost twenty or twenty-five dollars per month, against two dollars and a half per month there; but when you take into consideration the great lack of economy in the management there, the difference would not amount to so much. In India all tools and lead have to be brought from England, and transported on men's backs for many miles; the constant rebuilding of houses, rendered necessary by the white ant and fire, every year or two; the enormous cost of management, which amounts to more than one-half of the actual amount spent in the year; the physical inability of the Bengalee coolies to do much labor; the difficulty of procuring labor, and the unhealthy climate, all combine to bring the cost per acre to as much as it would be in America.

The Tea once planted only requires to be kept free from weeds, which can be done here with the plough, the same as with Indian corn, and at the same cost. In India they have neither horses nor plows, and all weeding must be done with the hoe in the hands of a lazy and weak coolie. After the Tea is pretty well grown, say four or five years old, its own shade pretty much keeps the ground clean.

Should our Government once take hold of the subject, and demonstrate that Tea can be grown, and to a profit, the demand for seed alone, would soon pay all cost. The yield of seed is, on an average, four "maunds" (a "maund" is eighty pounds) to the acre, and I sold one year from my garden four thousand "maunds," at two hundred rupees per "maund," and could have sold forty thousand "maunds" at the same figure.

JUST TO THE POINT.—Mr. Reed, President of the State Agricultural Society of California, in his opening address at the State Fair in Sacramento, made the following suggestive remarks, which thousands of our able bodied men might take to heart and better their condition:

"And right here, lest I forget it in a more appropriate place, I propose to say what would make my own ears tingle, and I fear unduly excite me should I hear it said by any other than a Californian, viz: that it is a shame—a disgrace—a burning sarcasm upon the intelligence and industry, and financial common sense of Californian agriculturists that, in such a country, where dairy products might be more abundant, and secured at less expense than anywhere else in the land, so many sit down and fold the hands, or roam from place to place looking for "situations" behind the counter, where they may sell tape and calico to lady shoppers, or in some counting-room where they may play second fiddle to an assistant book-keeper's clerk, while we pay for making and bringing three thousand miles a hundred tons of butter a week—and all this while tens of thousands of acres of as good dairy lands as ever lay out door, and as many lowing herds of the best dairy kine unite in calling you young men to marry wives, and milk the cows and make the butter and get the money for your purse. If you have no capital, take a farm, as the old folks say, "on shears," and my word for it, the clippings of those "shears" will, the first year, enable you to begin to buy, begin to breed, begin to multiply your stock, begin to be an employer, an independent influential member of society and a benefactor of the State."

Mr Reed's remarks may be applied with great force to the class of people which Mr. Phelps describes thus:

"Many old Californians are too restless and too much occupied with the golden dreams and visions of the past to settle down to any steady or safe employment. If they would build themselves houses they might at least be surrounded with every comfort. The next most serious hindrance to our prosperity is the tendency of our people to drift into our large towns and cities. This disposition is not only manifested by the people of California, but of the whole country, and must be regarded as one of the most evil tendencies of the age. One-fourth of the population of this State to-day resides in the city of San Francisco, and one-fourth of the balance in the six or seven next largest cities of the State. Rural life is fast losing its charm for our people, who are exchanging their quiet homes and simple habits, the pure air and pleasant scenery of the country, for rented rooms amid the restless confusion of city life."

SUGAR, FLAX, COTTON AND WINE.—Extracts from the annual address of Hon. T. G. Phelps at the Sacramento State Fair.

"The experiment of making Sugar here having proved an entire success in every particular, it is confidently predicted that in four years from to-day we will produce all the sugar consumed in the Pacific States and Territories, and in ten years we will send to other States and countries, of our own production, three times the amount we now import.

There is now quite a large amount of flax raised in this State, for the seed alone, no use being made of the fiber. This is a great waste, which should, if possible, be avoided. Cannot some cheap method be devised for preparing this fiber for use, though it may be in the coarsest products, such as grain-bags, or rope? He who can utilize this material and prevent its waste will confer a great benefit upon the State.

One experiment, at least, upon a scale sufficiently large to test our climate and soil for raising Cotton successfully, is being made. A field, embracing seventy acres, is now growing on the Merced river, five or six miles below the town of Snellings. When I had the pleasure of visiting the field, some six weeks ago, the Cotton was in a very thrifty condition, with the early seed bolls closed. The harvest of the fiber is probably now about commencing, and will continue until November or December. Experi

enced Cotton growers from the Southern States informed me that the field was a fair average of the crops in Louisiana, and would probably yield three-fourths of a bale of ginned Cotton to the acre. The entire crop was planted and cultivated by three men. This is more ground, I am informed, than the same men could have cultivated in the Southern States. The experiment, therefore, bids fair to prove a satisfactory one; and it is quite probable we may hereafter be able to add Cotton to our regular productions.

The raising of Grapes and the manufacture of wine and brandy seems now to be firmly established as one of our leading and most profitable industries. There is no longer, I am informed, any difficulty in marketing the entire product at remunerative rates, and it is quite probable the demand will increase faster than the production can be increased. Last year we produced six million gallons of wine, worth $3,600,000 and one hundred and fifty thousand gallons of brandy, worth, duties unpaid, $112,500. This year it is estimated we will produce from eight to ten million gallons of wine, worth, say $4,500,000, and two hundred thousand gallons of brandy, worth $150,000, and it is fair to calculate that this ratio of increase in production and value will be kept up for years to come. It is estimated by our principal wine merchants that one half of our product is consumed by the States to the east of us, while they are regularly shipped to Mexico, South America, Sandwich Islands, Australia, Japan, China, England, and occasional lots to the continent of Europe. From every part of the world to which they are sent fair reports come back as to their excellence, and orders increase, showing that they have a better standing abroad than at home. Of course their reputation has suffered somewhat from unskilled makers, and from counterfeiting. Messrs. I Landsberger & Co. are now putling up 1,500 dozen per month of their champagne wine, and are unable to supply the demand. What may we not expect from this industry, when we reflect that the entire champagne district of France is not greater in area than Sonoma county, and yet employs ten thousand men in the cultivation of the Grape, and ten thousand more in the preparation of the wine for market? We have now 35,000,000 bearing vines growing on 47,000 acres. The average yield per acre for the Grapes is about $60, but the choice varieties will yield $100,000 or more, and this, too, on our poorest soil. What more profitable or sure investment can a poor man desire? Uncle Sam gives the land, and his own labor is sufficient to put out a vineyard from which a sure annual revenue may be derived for himself and his children. One of the strange peculiarities of our people, showing their singular attachment to articles of foreign growth and manufacture, may be noted in the fact, that while we are sending wine to the four quarters of the globe, a wine that we know to be pure juice of the Grape, we imported during last year 451,947 gallons of wine costing, duties paid, more than $550,000."

Be Just to the Gardeners.—A friend called at my office last week and asked me if I could recommend him a gardener who could manage his place. Knowing that he already had one of the best men in the vicinity of New York, I asked him what was the matter. He replied, that Mr. ——— was perfecty incompetent, that his grounds were overgrown with weeds and everything in disorder. Further inquiries elicited the fact, that he had reduced his assistants, to curtail expenses; which, coupled with the fact that this vicinity has been deluged with rain during the whole of August, readily accounted for the weeds and disorder. It is short-sighted economy to withhold labor in the garden or on the farm, whether it be worked for pleasure or for profit. Surely it is anything but pleasing to see grounds overgrown with weeds, and as to profit, we all know that weeds in the ascendancy are the bane of all profit to the worker of the soil.

Ten minutes of this kind of reasoning

seemingly convinced my friend that he, rather than his gardener was at fault.—*Peter Henderson, in the American Agriculturist.*

We make the following extracts from the monthly report of the Department of Agriculture for August and September:

Adulteration of Clover Seed.—A confidential circular from an enterprising German in Hamburg has lately come to light containing an offer to sell several tons of sand suitable for mixture with Clover seed, the grains of which resemble the seed so closely that it is almost impossible to distinguish them by the eye. The writer of this circular announces that this sand is in great demand, especially in England, for purposes of adulteration. Two colors are supplied, one for red clover and one for white.

The European Plane-Tree in Cities.—No tree resists so well the smoke and impure air of European cities as the Plane, *(Platanus occidentalis,)* although it is not a native of that continent. It is the tree most generally seen in the churchyards, squares, and other open spaces in London, thriving well, and living to a considerable age. This is probably in part due to the fact of the outer layer of bark being shed yearly, and thus not becoming choked with smoke so that its functions are destroyed. The rows of young Plane-trees planted along the recently opened portion of the Thames embankment, from the Houses of Parliament to Charing Cross and the Temple, are growing vigorously, and promise in a few years to afford a grateful shade, and to add much to the beauty of the banks of the river.

Influence of Conditions of Heat on the Growth of Plants.—A paper has lately been published by Köppen, upon the relationship of conditions of heat to the phenomena of growth in plants; his first inquiry being limited to the questions connected with the germination of the seed. The general conclusion arrived at, was, that variations of temperature were in all cases prejudicial to the growth of the germ, even when amounting to but a few degrees, and these within limits favorable to energetic growth. That is to say, the germination proceeds more rapidly at a low temperature of a uniform degree, than at a higher, when subjected to more or less variation. From this we derive the inference that a nearly uniform Spring temperature, with a cloudy sky, is more favorable to rapid development of vegetation than the alternation of hot days and cool nights, it being of course understood that the mean temperature in each case is about the same.

Tremellat Process for Preserving Grapes.—A recent process for preserving Grapes through the Winter, introduced by M. Tremellat, of Marseilles, is commended in agricultural journals as answering its purpose better than many of the improved methods of the day. This depends upon the fact, that in the ordinary storage of Grapes, a portion of the water, both of the stem and of the berry, is lost by evaporation, so that they dry up unless moisture is restored to them. To obviate this difficulty, the bunches are cut in such a manner as to leave a considerable portion of the adjacent woody part of the vine, and are then suspended over a vessel filled with water, so that while only hanging near the surface of the water the ends of the stems are immersed. As the moisture evaporates from the Grapes it is restored by capillary absorption through the stem, and no change takes place. By means of the arrangement thus indicated, M. Tremellat has succeeded in keeping Grapes from one year over into another, fresh and fair as in the moment of gathering, and his method is now used on a large scale in Paris and elsewhere.

Mathoit's Grapes.—We have seen several boxes of grapes from Mathoit's vineyard, near Butteville, that are at least equal to those brought from California. The varieties tasted were the Black July and Royal

Muscadine. They are as sweet and well flavored as any grape we have tasted this season, and are a sufficient evidence, to us, that some localities in this valley are well adapted to grape culture. Mr. Mathoit's vineyard will produce for the market over a thousand boxes the present season.—*Willamette (Oregon) Farmer.*

Extracts from Monthly Report of the Department of Agriculture, for October, 1871.

Determining Tannin in Oak Bark.—A method lately introduced by Loewenthal for determining the amount of tannin in oak bark, is based upon the fact that tannin, in the presence of indigo, is decomposed by permanganate of potash in such a manner that, with the final disappearance of the blue color, the last trace of the tannin is also decomposed. For this inquiry, the following liquids are needed: First, a solution of indigo carmine; second, a solution of tannin; third, a solution of the chameleon mineral or permanganate of potash; and, fourth, a solution of oxalic acid.

Utilization of Surplus Potatoes.—In cases where the potato crop is so large as not to be readily marketable, and more or less in danger of decaying through the winter, the surplus can be so treated as to furnish a valuable article of food, capable of preservation for a long time. For this purpose, the potatoes are to be washed clean, steamed, peeled while still hot, and finally pressed through a fine sieve. The potatoes thus compressed are then to be laid, while still hot, upon gratings and dried as quickly as possible, say in ten or twelve hours, in order to avoid any souring or putrefaction—this being generally the result of drying too slowly, or with an insufficient heat. The potatoes dried in this way are of an excellent flavor, and can be packed and kept for years in a dry place, and are serviceable for provisioning ships, armies in the field, etc. About one thousand pounds of fresh potatoes will make one hundred pounds of the dry article, which, when properly prepared, will have precisely the flavor and appearance of freshly-boiled potatoes.

Speedy Growth of Radishes.—In the publications of the Acclimatization Society of Palermo, we are informed that radishes may be obtained at any season, and very quickly, in the following manner: The seeds are to be first soaked for twenty-four hours and then placed in bags and exposed to the sun. They will begin to germinate in about twenty-four hours, and are then to be set in a box filled with well-manured earth, and moistened from time to time with lukewarm water. In five or six days the radishes will attain the size of a small onion. To grow radishes in winter, the box is to be placed in a warm cellar, covered with a top, and the earth moistened from day to day with lukewarm water.

Cundurango. — The Secretary of State, Hon. Hamilton Fish, has transmitted to this Department a package containing specimens of the fruit and seed-bearing capsules of the "cundurango" plant or vine, received from Charles Weile, United States Consul at Guayaquil, together with the following extract from the official letter of the Consul:

"I have just returned from a visit to the cundurango region, in the province of Loja, where I spent a month in collecting the different species of the plant. Dr. Destruge, of this city, an excellent botanist, has classified the vine as belonging to the order *Asclepiadaceæ*. The word "cundurango" is a compound of "*cundur*," eagle, and "*ango*," a vine. The aborigines probably applied this name owing to the winding growth of the vine, and because it seeks the highest trees for its support. Its growth is most vigorous in moist places, on the banks of rivers and creeks, where the body often attains a diameter of two to three inches, diminishing gradually to tendrils at the top. The family is a numerous one. Leaves, vines, fruit and flowers of the species differ materially, but all contain —some in a greater degree than others—a liquid that resembles milk, and which, ex-

posed to heat, or coming in contact with other bodies, coagulates and forms an aromatic resinous substance."

Inclosed was a list of the specimens and a piece of the balsam which the milk produces. The list names the following varieties, all found at Zaruma : No. 1, *Cundurango Pepino;* No. 2, *C. Tumbo Grande;* No. 3, *C. Tumbo Chico;* No. 4, variety of *C. Tumbo Grande;* No. 5, *C. Paloma Grande;* No. 6, *C. Batea Grande.*

The seeds received by this Department will be propagated, with the design of testing the practicability of the cultivation of the plant in some section of this country, should its production be found to be desirable.

Warm Water for Plants.—Mr. R. G. Williams, of Vermont State Normal School, writes us upon this subject as follows :

"I see some remarks in your monthly report upon the benefit of watering house-plants with warm water. Last winter we had about one hundred plants in the house, and usually gave them warm water, and very frequently water that was much too warm for the hand ; some water at or very near the boiling point has been poured into the saucers of the pots and just on the sides. We have about forty persons in the family, from different parts of the country, and their testimony is, that they never saw so fine geraniums, heliotropes, fuchsias, verbenas, passion-flowers, and oleanders. These plants show very marked improvement; others have flourished finely under the treatment."

All house-plants are better for being watered with water several degrees warmer than the atmosphere in which they are grown.

Influence of Heat of Soil on Growth of Plants.—The result of a recent investigation by Bialoblocki, in regard to the influence of the warmth of soil upon the development of certain cultivated plants, is summed up by him in the following words : The influence of warmth of the soil is made manifest in two directions ; in the shortening or lengthening of the period of vegetation, and in affecting the external form of the plant ; the acceleration of growth of vegetation occurring principally in the earlier periods. With an ascending temperature of the soil, vegetation is forwarded up to a certain point. From the moment, however, when this point is reached, an increase of temperature in the soil actually retards growth. The maximum point of favorable temperature of the soil varies for different plants ; but the maintenance of a constant temperature has for its results a more vigorous growth of the plant experimented on. The extreme limit of a constant temperature of the soil at which a growth of the roots can still take place, we may assume to be below, but very near 104 degrees Fahrenheit. A ground temperature of 50 degrees Fahrenheit barely allows plants to fulfil completely all their functions of life and conditions of development. An increased ground temperature has no special influence upon the absorption of nutritious matter through the roots ; and the accelerated growth resulting from increase of heat is usually accompanied by a greater percentage of water in the plant.

Regianine.—According to Dr. Phipson, the English Walnut, *(Juglans regia,)* and probably the American species also, contain, among other substances, one which he calls *regianine*, (obtained by treating the green husk of the fruit with benzole,) which appears in the form of a yellowish substance crystallizing in groups of feather-like crystals. These are easily decomposed, and when treared with alkalies or ammonia, yield a splendid and durable red solution, which by a subsequent treatment, becomes the jet black, amorphous pure regianic acid.

Egg-Plants need all the encouragement that frequent hoeing and liquid manure can give them; destroy the Tomato worm, which is often found feeding upon them.

END OF VOLUME I.

